

The Herschel Solar System Observations Catalogue - Explanatory Supplement

Volume III

The Herschel-SPIRE Catalogue of Serendipitous Photometric Observations of
Solar System Objects



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The Herschel Solar System Observations Catalogue - Explanatory Supplement

Volume III: The Herschel-SPIRE Catalogue of Serendipitous Photometric Observations of Solar System Objects

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1. Abstract

We present the third volume of the Herschel Solar System Observations Catalogue (HCSSO), a catalogue prepared as a complement to the two catalogues of Herschel point source observations: The Herschel/SPIRE Point Source Catalogue (HSPSC) and the Herschel/PACS Point Source Catalogue (HPPSC), which filter and exclude moving targets.

The SPIRE ICC has made this information on detected moving targets available for analysis on an “as is” basis. Here, we take this listing of detections and provide full details of each serendipitous observation, including target classification, observational circumstances, links to postcards, fluxes and other useful ancillary information. We also compile the observations by target to offer a summary of the targets and basic statistics for each object observed.

Out of 4550 candidate detections, we catalogue 4202 detections of 1174 objects, after eliminating duplicates and false positives.

SPIRE mapped ~9% of the sky at 250, 350 and 500 microns. While the vast majority of the ~1.7 million sources detected and catalogued in the Herschel/SPIRE Point Source Catalogue (Schulz et al., 2017) are galaxies, apart from targeted Solar System Observations, SPIRE also made nearly 13000 serendipitous observations of nearly 1200 asteroids. While these observations represent only 0.7% of the total of point sources detected, they represent a large database of far infrared observations of solar system targets, including Main Belt asteroids, Amors, Apollos, Jupiter Trojans, Centaurs and Trans-Neptunian Objects. A measure of how large this database of serendipitous observations is that Herschel made a total of just 1693 targeted observations of Solar System objects, representing 170 individual objects, including both photometric and spectroscopic observations, thus we have an order of magnitude more serendipitous photometry than targeted observations of Solar System Objects.

2. Table of Contents

Volume III	1
The Herschel-SPIRE Catalogue of Serendipitous Photometric Observations of Solar System Objects	1
HERSCHEL-HSC-DOC-2323	1
Version: 1.0	1
2 nd July 2019	1
HERSCHEL-HSC-DOC-2323, Version: 1.1, 26 th July 2019	3
1. Abstract	4
2. Table of Contents	5
3. List of tables	8
4. List of Figures	10
5. The Herschel Solar System Observations Catalogue	13
6. Introduction to Volume III	13
7. Acronyms	14
8. Catalogue objectives	15
8.1. Background	15
8.2. Sky Coverage	16
8.3. Scope	16
8.4. Number of observations and targets included	17
8.5. List of ObsIDs used	17
8.6. Observational circumstances and the limitations that they impose	19
8.7. Solar System Objects with observations at ten or more epochs	21
8.8. ObsIDs used in the compilation of the catalogue	23
8.9. Acknowledgements	53
8.10. Important warning	53
9. The SPIRE instrument and its data	54
9.1. Background information about SPIRE	54
9.2. Observing with SPIRE	55
9.3. Pipeline processing	56
9.4. Completeness, reliability and other caveats	57

9.4.1.	A note on application of data	57
9.4.2.	Completeness.....	58
9.4.3.	Source detection and reliability	59
9.4.4.	Solar System Object identification.....	59
9.5.	Methods.....	61
10.	Catalogue description	62
10.1.	Contents.....	62
10.2.	Objects included	62
10.3.	Description of the catalogue.....	63
10.3.1.	Listing of column headings used in the main catalogue	64
10.3.2.	Catalogue format	66
10.3.3.	Sample catalogue entry for a single ObsID	66
10.3.4.	Description of contents of columns.....	66
10.3.4.1.	ObsID.....	66
10.3.4.4.	IAU Nomenclature.....	67
10.3.4.5.	Alternative Names	67
10.3.4.6.	First Classification	67
10.3.4.7.	Dynamical Classification.....	67
10.3.4.8.	Second Dynamical Classification	68
10.3.4.9.	Classification comment.....	68
10.3.4.10.	OD	68
10.3.4.11.	Start Time.....	68
10.3.4.12.	End Time	68
10.3.4.13.	Integration	68
10.3.4.14.	Mode.....	68
10.3.4.15.	Instrument	68
10.3.4.16.	P/S.....	68
10.3.4.17.	Band wavelength1	68
10.3.4.18.	Band wavelength2	68
10.3.4.19.	Band wavelength3	68
10.3.4.20.	Postcards.....	69
10.3.4.21.	Albedo.....	69
10.3.4.22.	+ Standard deviation albedo.....	69
10.3.4.23.	- Standard deviation albedo.....	69
10.3.4.24.	B-V.....	69
10.3.4.25.	B-V errors \pm	69
10.3.4.26.	RA/Dec.	69

10.3.4.27.	Illumination	69
10.3.4.28.	r	69
10.3.4.29.	Delta	69
10.3.4.30.	Phase (STO)	69
10.3.4.31.	Flux_250	69
10.3.4.32.	Flux standard deviation (\pm)_250	69
10.3.4.33.	Flux_350	70
10.3.4.34.	Flux standard deviation (\pm)_350	70
10.3.4.35.	Flux_500	70
10.3.4.36.	Flux standard deviation (\pm)_500	70
10.3.4.38.	250/350	70
10.3.4.39.	250/500	70
10.3.4.40.	350/500	70
10.3.4.41.	Flux (250) 1AU	70
10.3.4.42.	Flux (350) 1AU	70
10.3.4.43.	Flux (500) 1AU	71
10.4.	Description of files provided	71
10.4.1.	Plot of Solar System Objects observed in each ObsID	71
10.4.2.	Summary of photometry by Solar System Object	72
10.4.3.	Flux variation with heliocentric distance	73
10.4.4.	Objects that show anomalous behaviour	76
10.5.	Summary of photometry	80
11.	Analysis	132
11.1.	Distribution by taxonomic type	132
11.2.	Distribution by 500/250-micron flux ratio	133
11.3.	Distribution by Power Law Slope	136
12.	Conclusions	139
13.	References	140

3. List of tables

Table 1: A tabulation of all ObsIDs with serendipitous asteroid detections by the SPIRE photometer that were used in the compilation of the catalogue. 19

Table 2: SSOs detected in 10 or more ObsIDs. 22

Table 3: The details for the 380 ObsIDs used in this study. From left to right the columns show: the ObsID; the observing mod, “SpirePhotSmallScan”= small map, “SpirePhotLargeScan” = large map (note that no SPIRE PACS Parallel Mode observations were included by the SPIRE ICC In the input for this catalogue); the OD; the proposal name for the observation; the access status of the data (“Restricted” means that the data was taken in a special, non-standard mode and, for this reason, the original data are not available to the community at large; the main target of the observation (only given for readily recognizable targets – where no details are given the observation is almost invariably of a cosmological field, or of the Galactic Plane); and the URL of the postcard of the observation, which can be used to assess the observation and its quality..... 52

Table 4: The basic parameters for photometry of detected sources. 62

Table 5: Classification of SSOs included in this catalogue. While the majority, unsurprisingly, are Main Belt asteroids, a substantial number of Jupiter Trojans are also detected, representing nearly 1% of the known objects in this class. 63

Table 6: Summary of photometric data for the objects listed in this catalogue. The columns are, from left to right: asteroid name; classification; maximum, minimum and median heliocentric distance of observation by Herschel; median flux at 250 microns (mJy); median flux at 350 microns (mJy); median flux at 500 microns (mJy); standard deviation of 250 micron flux; standard deviation of 350 micron flux; standard deviation of 500 micron flux; number of observations; s/n at 250 microns; s/n at 350 microns; s/n at 500 microns; ratio 250/350 micron flux; ratio 250/500 micron flux; ratio of 350/500 micron flux..... 118

Table 7: Summary of the photometric parameters for the flux curve for objects in this catalogue that were observed over a range of at least 0.07AU in heliocentric distance,. The columns represent, from left to right: Name; NAIF ID; Maximum and minimum heliocentric distance of observation by Herschel; Number of Observations; Slope (b) of the 250-micron Flux v heliocentric distance power law ($F=a \cdot r^b$) – left blank if the range of heliocentric distance is <0.07AU; Correlation coefficient r^2 – left blank if the range of heliocentric distance is <0.07AU; Taxonomic type, where known. 128

Table 8: Physical parameters for the twenty-seven objects for which a positive slope of 250 micron flux against heliocentric distance is observed. From left to right the columns are: number, name and provisional designation; NAIF ID; number of measures; slope (b) of the 250-micron Flux v heliocentric distance power law ($F=a \cdot r^b$); Correlation coefficient r^2 of power law fit (shown as “1” if there were just two observations); Taxonomic type, where known; absolute magnitude; measured radius in kilometres; albedo; rotation period in hours (if known); UT date of first Herschel observation; heliocentric distance in AU of first Herschel observation; UT date of last Herschel observation; heliocentric distance in AU of last Herschel observation; segment of orbit (“inbound” if approaching

perihelion, “outbound” if receding from perihelion).	129
--	-----

Table 9: Additional details of the twenty-seven asteroids that show larger flux at greater heliocentric distance. The columns are, from left to right: number, name and provisional designation; NAIF ID; maximum heliocentric distance at which the asteroid was observed by Herschel in AU; minimum heliocentric distance at which the asteroid was observed by Herschel in AU; perihelion distance ; aphelion distance; number of observations; power law slope of 250 micron flux normalized to a geocentric distance of 1AU against heliocentric distance; correlation coefficient (R^2) of the power law slope of 250 micron flux normalized to a geocentric distance of 1AU against heliocentric distance; taxonomic type; absolute magnitude; radius in kilometres; albedo; rotation period in hours; UT date and time of first observation with Herschel; heliocentric distance of first Herschel observation; UT date and time of last Herschel observation; heliocentric distance of last Herschel observation; orbit quadrant (pre-perihelion, post-perihelion, pre-aphelion, post-aphelion).	130
---	-----

Table 10: Fraction of the 1174 Solar System Objects in the catalogue with a known versus unknown taxonomic classification. In all, slightly over two-thirds of the objects included are of unknown type.	132
---	-----

Table 11: The breakdown of asteroids with known SMASS taxonomic type observed in this catalogue. Two thirds of all the objects of known type are either carbonaceous (B & C), or silicate (S).	132
---	-----

Table 12:Wavelength of the peak blackbody emission for a range of temperatures and for some small, outer solar system bodies.	134
--	-----

4. List of Figures

Figure 1: The sky coverage of SPIRE photometer observations compiled in the Herschel/SPIRE Point Source Catalogue. Approximately 9% of the sky is covered in total, but some fields in the Galactic Plane had to be eliminated as they showed such a high degree of background structure that it was impossible to detect point sources reliably in these areas. Many of the fields that were eliminated were observed in SPIRE PACS Parallel Mode within the HiGAL Galactic Plane mapping programme (KPOT_smolinar_1 and subsequent extensions), thus only a relatively few SPIRE PACS Parallel Mode observations are included in the Herschel/SPIRE Point Source Catalogue. 16

Figure 2: The raw flux curve for 1 Ceres. We see the clustering of data points into visibility windows, with long gaps in between and the influence of the changing Herschelcentric distance on the observed fluxes. The highest fluxes are measured closest to opposition while, close to conjunction, the Herschelcentric distance increases considerably and the observed fluxes reach a minimum. 20

Figure 3: The raw flux curve of the asteroid 2512 Tavastia. In this case the asteroid was crossing a survey field with the result that there are many observations clustered almost exclusively in a single visibility window. Although found in eighteen different ObsIDs there are, effectively, only six independent epochs (ODs 1116, 1117, 1135, 1156, 1166 & 1314), with multiple points in the fourth and fifth of these ODs. 21

Figure 4: A typical asteroid calibration observation. This is a large SPIRE map of 19 Fortuna, projected in front of the Milky Way in Taurus, hence the highly-structured background. 53

Figure 5: A typical observation of a cosmological field. This is a $2^\circ \times 2^\circ$ map of the COSMOS (Cosmological Evolution Survey) field. A field of this kind may contain several thousand galaxies. ... 53

Figure 6: The main components of SPIRE. Top left: Cold FPU ($T \approx 1.7$ K) on the photometer side. Top right: spectrometer side. Bottom: A functional block diagram showing the components of the harness connecting the cold FPU inside the Herschel cryostat on the payload module with the warm electronic unit on the satellite service module. 55

Figure 7: A summary table of SPIRE Products..... 57

Figure 8: Illustration of the Timeline Fitter aperture and annulus plotted over a standard map with $10''$ pixel size for a $350\mu\text{m}$ map on the left, and the same map rendered with $1''$ pixels that better shows the actual detector timelines that are being fitted. 61

Figure 9: A compilation of all SPIRE serendipitous photometry of Solar System Objects. All the observations for the objects observed on multiple occasions over a range of dates are thus plotted individually, hence some objects are represented with multiple points. 250, 350 and 500-micron data are shown in blue, green and red respectively. An indication of the ranges of heliocentric distance (r) covered by objects of different dynamical classes is shown on the plot: NEOs, Near Earth Objects; MBAs, Main Belt Asteroids; JTs, Jupiter Trojans; Centaurs; and TNOs, Trans-Neptunian Objects. These ranges are indicative only: for example, a third object, 310071 (2010 KR59), appears within the range indicated for Centaurs; this object has a semi-major axis greater than 30AU and is

thus classified as a TNO, although it was observed by Herschel when almost at perihelion. Only one object was observed at $r < 1\text{AU}$ as Herschel's observing geometry made such observations extremely difficult to schedule, while no objects were observed at $r > 100\text{AU}$. As expected, the majority of observations correspond to MBAs, with Jupiter Trojans representing the second largest sub-set of data. 63

Figure 10: A sample plot of flux in millijansky against heliocentric distance for a simple ObsID in which only two SSOs are detected. Both objects are labelled with the permanent number. 71

Figure 11: A sample plot of the more complex case in which a single ObsID (1342236232) contains many detected SSOs. There are numerous ObsIDs with more than 200 and even more than 300 detected asteroids in a single ObsID. In this case, it is impractical to label each point with the corresponding asteroid number. We limit ourselves to providing the table to the right in which all the detected SSOs are listed by number, in order of increasing heliocentric distance. The listing is by columns, starting with the object of lowest heliocentric distance in the top left-hand corner, continuing down the columns in turn, from left to right and ending with the object of largest heliocentric distance in the bottom right-hand side. The flux cut-off for detection is clearly visible.. 72

Figure 12: 500 micron flux for 47 Aglaja, corrected for geocentric distance, against heliocentric distance for all SPIRE observations included in this catalogue, along with the power law fit. 75

Figure 13: 350 micron flux for 47 Aglaja, corrected for geocentric distance, against heliocentric distance for all SPIRE observations included in this catalogue, along with the power law fit. 75

Figure 14: 250 micron flux for 47 Aglaja, corrected for geocentric distance, against heliocentric distance for all SPIRE observations included in this catalogue, along with the power law fit..... 76

Figure 15: 500 micron flux for 220 Stephania, corrected for geocentric distance, against heliocentric distance for all SPIRE observations included in this catalogue, along with the power law fit and correlation coefficient. We see that the flux increases at increasing heliocentric distance. 77

Figure 16: 350 micron flux for 220 Stephania, corrected for geocentric distance, against heliocentric distance for all SPIRE observations included in this catalogue, along with the power law fit and correlation coefficient. We see that the flux increases at increasing heliocentric distance. 77

Figure 17: 250 micron flux for 220 Stephania, corrected for geocentric distance, against heliocentric distance for all SPIRE observations included in this catalogue, along with the power law fit and correlation coefficient. We see that the flux increases at increasing heliocentric distance. 78

Figure 18: The breakdown of SMASS types for the asteroids observed by SPIRE reported in this catalogue. The distribution is dominated by types S, C & B. 133

Figure 19: The 250 micron flux divided by the 500 micron flux for the full data sample, plotted against heliocentric distance. The ratio tends to a value of 3.85 at heliocentric distances smaller than 2AU..... 134

Figure 20: The 250 to 500-micron flux ratio against heliocentric distance for different classes of

object.	135
Figure 21: The equivalent plot to Figure 17 for the 350 to 500-micron flux ratio variation with heliocentric distance. As expected, the ratio is almost constant even out as far as the Trans-Neptunian Belt.	136
Figure 22: Normalised 500-micron flux against normalised 250-micron flux. There is a suggestion of a split into a group with higher 500-micron fluxes and a group with lower 500-micron fluxes, as shown by the two bounding lines.	136
Figure 23: Histogram of the distribution of Power Law slopes of 250 micron flux against heliocentric distance for the 178 objects with fluxes measured at a minimum of two epochs and with a heliocentric distance range of at least 0.07AU.	137
Figure 24: Power Law slope of the 250 micron flux against heliocentric distance for the asteroids described above. A weak trend is observed to more negative slope at larger heliocentric distances. In contrast, all four objects observed inside the orbit of Mars show positive slope.....	138
Figure 25: As Figure 24, but with the objects identified by taxonomic type. Only the main categories are shown, with the minor categories being grouped-together in a miscellaneous category. It is noticeable that the fraction of S-Type asteroids that show positive slope is ~70% - double their fraction in the sample as a whole, although this is within a small sample and thus subject to small-number statistics.....	139

5. The Herschel Solar System Observations Catalogue

This is the third volume of the Herschel Solar System Observations Catalogue and presents information that is complementary to and not included in the previous two volumes. In order of delivery, they are:

Volume I – The catalogue of aperture photometry of active comets observed by Herschel/PACS.

Volume II – The full catalogue of all targeted Herschel Solar System Observations.

Volume III – The catalogue of serendipitous observations of Solar System Objects detected in the compilation of the Herschel SPIRE Point Source Catalogue.

6. Introduction to Volume III

The Herschel Space Observatory ([Pilbratt et al. 2010](#)) was the fourth cornerstone mission in the European Space Agency (ESA) science programme. It had a primary mirror of 3.5m in diameter that allowed an unprecedented spatial resolution and sensitivity at far-infrared (FIR) and sub-millimetre (smm) wavelengths.

Herschel operated successfully from first light on 14 June 2009 to 29 April 2013, when it exhausted the liquid helium coolant required to maintain the operational temperatures for the instruments' detectors.

The three instruments on-board covered the FIR and sub-mm spectral range from ~ 55 to $671\ \mu\text{m}$. The Photodetector Array Camera and Spectrometer ([PACS, Poglitsch et al. 2010](#)) and the Spectral and Photometric Imaging REceiver ([SPIRE, Griffin et al. 2010](#)) were able to make both spectroscopic and photometric observations, while the Heterodyne Instrument for the Far Infrared ([HIFI, de Graauw et al. 2010](#)) was a purely spectroscopic instrument. Over 35 000 science observations were made during the more than 25 000 hours of science time, while approximately 10 000 calibration observations were also made in standard science modes and are of science quality. The large legacy dataset that was obtained that is far from having been fully analysed and which still has a great potential for new scientific discoveries, which provides the motivation for the present catalogue.

The observing time was allocated to both Guaranteed Time (GT) and Open Time (OT) Programmes, with $\sim 5\%$ reserved for Director's Discretionary Time observations. Many excellent source catalogues have already been produced by these observing programs, however there are many observations that remained unexplored. To maximise the scientific return of the Herschel photometric observations, the Herschel/SPIRE Point Source Catalogue ([HSPSC, Schulz et al. 2017](#)) and the Herschel/PACS Point Source Catalogue ([HPPSC, Marton et al. 2017](#)) were generated.

These provided a homogeneous source extraction that enables a systematic and unbiased comparison of sensitivity across the different Herschel fields, which single programs will generally not be able to provide, making them a fundamental resource for future generations of data-miners. The extracted point sources include mainly individual Young Stellar Objects (YSOs) and unresolved YSO clusters of our Galaxy, as well as the dusty extragalactic objects – galaxies – of the local and distant Universe. Such a huge dataset can help scientists better to understand the early phases of star and galaxy formation in addition to the possibility of carrying out statistical analysis of stellar

and galaxy clusters to unravel astrophysical evolution laws through time. They will also provide an excellent target list for future proposals with ground and space-based facilities.

However, although both the HSPSC and the HPPSC detected thousands of Solar System Objects, these were rejected in the filtering process, which identified and eliminated moving targets, leaving a homogeneous set of fixed targets but, in the process, removing an important sub-set of science targets.

The motivation for the Herschel Solar System Object Observations Catalogue is as a complement to the HSPSC and the HPPSC, producing an equivalent homogenous compilation of photometric data in the six Herschel bands between 70 and 500 μm for solar system objects observed by Herschel.

Within Volume III of this catalogue we present only serendipitous SPIRE photometric data. Targeted SPIRE observations can be found in Volume II of this catalogue (Romero et al., 2018).

Herschel performed around 37000 targeted science observations of which 1693 were of Solar System objects (4.5% of the total), which represent 170 individual objects. In consequence, there are nearly an order of magnitude more serendipitous observations of Solar System Objects than targeted observations. Even the targeted observations have been only partially exploited to date. To facilitate their analysis, we have compiled these observations in the Herschel Catalogue of Solar System Object Observations (SSOO). We have included a detailed classification of the observed bodies, a complete ancillary information as well as physical circumstances of the observations (phase angle, heliocentric distance, etc.) to facilitate a search for correlations between properties.

We aim to facilitate the analysis of Herschel SSO data and help the scientific community to use the archive to widen our knowledge of the Solar System. Our own analysis of the data in this catalogue will be presented both as part of the Explanatory Supplement and as scientific publications.

7. Acronyms

ADP	Ancillary Data Product
Aka	Also known as
AOR	Astronomical Observation Request
AU	Astronomical Unit
ESA	European Space Agency
FIR	Far InfraRed
FWHM	Full Width Half Maximum
GT	Guaranteed Time

HSSOOC	Herschel Solar System Object Observations Catalogue
HIFI	Heterodyne Instrument for the Far Infrared
HiGAL	Herschel Infrared Galactic Plane Survey
HIPE	Herschel Interactive Processing Environment
HOTAC	Herschel Observatory Time Allocation Committee
HPDP	Highly Processed Data Product

HPP	Herschel PACS Photometry (data product)
HPPSC	Herschel-PACS Point-Source Catalogue
HSA	Herschel Science Archive
HSPSC	Herschel-SPIRE Point-Source Catalogue
IAU	International Astronomical Union
JPL	Jet Propulsion Laboratory
LD	Lunar Distance(s)
MPC	Minor Planet Circular or Minor Planet Center (according to context)
NAIF	Navigation and Ancillary Information Facility (NASA)
ObsID	Observation Identifier
OD	Operational Day
OT	Open Time

PACS	Photodetector Array Camera
PSF	Point source Spread Function
s/n	Signal-to-noise
SAA	Solar Aspect Angle
SMASS	Small Main Belt Asteroid Spectroscopic Survey
smm	Sub-millimetre
SPICE	Spacecraft Planet Instrument C-matrix Events
SPIRE	Spectral and Photometric Imaging REceiver
SSO	Solar System Object
SSOO	Solar System Object Observations
ToO	Target of Opportunity
YSO	Young Stellar Objects

8. Catalogue objectives

8.1. Background

The aim of this work was to use all the Solar System performed observations to create the Herschel Catalogue of Solar System Object Observations (HCSSOO), as a Herschel Highly Processed Data Product (HPDP), the goal of which is to become a reference archive from which information may be extracted selecting by type (e.g. object class, albedo, colour index) for comparative statistical studies and further exploitation of the data.

8.2. Sky Coverage

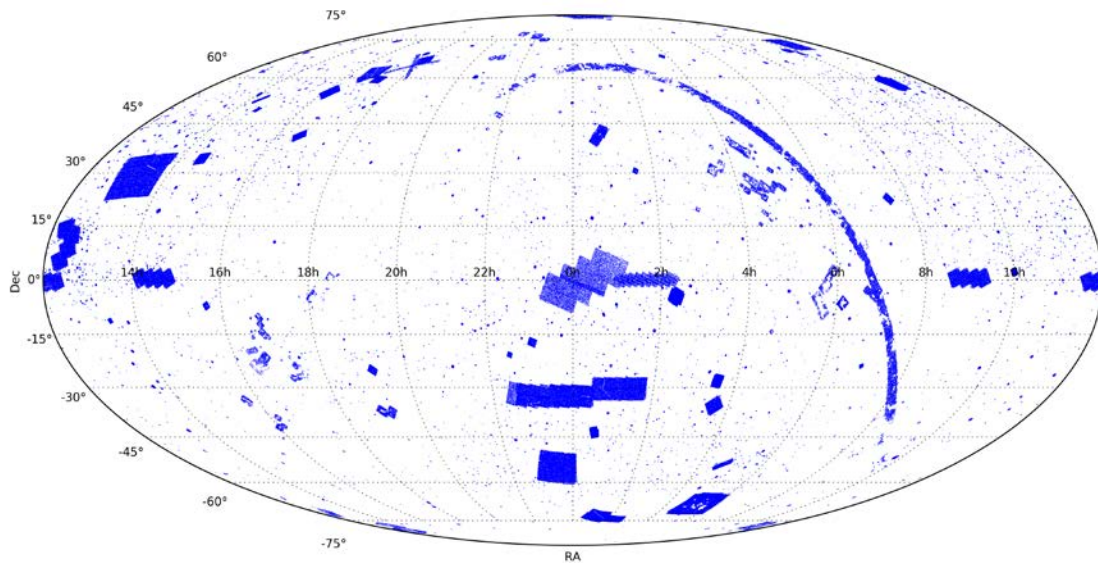


Figure 1: The sky coverage of SPIRE photometer observations compiled in the Herschel/SPIRE Point Source Catalogue. Approximately 9% of the sky is covered in total, but some fields in the Galactic Plane had to be eliminated as they showed such a high degree of background structure that it was impossible to detect point sources reliably in these areas. Many of the fields that were eliminated were observed in SPIRE PACS Parallel Mode within the HiGAL Galactic Plane mapping programme (KPOT_smolinar_1 and subsequent extensions), thus only a relatively few SPIRE PACS Parallel Mode observations are included in the Herschel/SPIRE Point Source Catalogue.

8.3. Scope

Volume I of this catalogue concentrated on PACS observations of active comets.

Volume II contained a complete database of all targeted observations of Solar System Objects from all three of Herschel's instruments.

Volume III – the present work – concentrates on serendipitous detections of Solar System Objects by the SPIRE photometer only.

All these observations are included in the catalogue, the creation of which consisted of 4 steps:

1. Compilation of the Herschel-SPIRE Catalogue of Serendipitous Photometric Asteroid Observations.

Point sources detected during the compilation of the Herschel/SPIRE Point Source Catalogue and identified with known solar system targets, thus excluded from the HSPSC, were compiled into catalogue of serendipitous SSO detections.

2. Organization of the information in order to facilitate accessibility and retrieval.

The aim of the catalogue is to be as complete as possible, for this reason different type of information was included, this information had been divided into three sections due to explanatory purposes:

(a) Classification of the observed bodies to facilitate defining samples. This section will consist on the

following information: NAIF ID, International Astronomical Union nomenclature, target, alternative names, first classification, dynamical classification, second dynamical classification, classification comment.

(b) Complete ancillary information for each SSO

The following data were included: Observation id, operation day, start time, integration time, Target, Alternative names, First Classification, Dynamical Classification, Second Dynamical Classification, Classification Comment, ObsID, OD, Start Time, End Time, Integration time, Observing Mode.

(c) Physical circumstances for each SSO

In these columns, physical circumstances for each solar system observed object found: postcard URL, Albedo, Positive Standard deviation of albedo, Negative Standard deviation of albedo, B-V, B-V errors \pm , RA/Declination, Illuminated fraction, heliocentric distance, Herschelcentric distance, Phase.

3. Fluxes.

Fluxes measured at 250, 350 and 500 microns by the HSPSC extraction routines were compiled and filtered carefully to eliminate a small number of false positives¹. Users are referred to the HSPSC Explanatory Supplement ([HSPSC, Schulz et al. 2017](#)) for more details. All fluxes are given as milli-Jansky (mJy).

4. Catalogue dissemination and preserving it as part of the Herschel Legacy Archive.

We aim to facilitate the analysis of Herschel SSO data and help the scientific community to use the archive to widen our knowledge of the Solar System. The catalogue will be published in the Herschel Science Archive as part of Herschel Legacy.

8.4. Number of observations and targets included

- Number of Solar System Objects detected – 1174
- Number of fluxes catalogued per SPIRE band (after cleaning) – 4202
- Total number of fluxes catalogued – 12606
- Total number of ObsIDs with detections of SSOs - 380

8.5. List of ObsIDs used

A total of 380 ObsIDs were used to compile the catalogue of serendipitous SSO observations. These

¹ These were almost all in ObsID 1342246580, executed on OD-1116, which was problematic for the automatic source extraction routines, leading to a number of duplicate detections, many of them with wildly inconsistent fluxes, which are, fortunately, relatively easy to identify as well as a few highly inconsistent flux measures, which have also been suppressed.

are listed in Table 1.

1342179029	1342187524	1342196663	1342203574	1342240277	1342248491	1342255137	1342265388
1342179356	1342187525	1342196664	1342203575	1342240282	1342248492	1342255167	1342266670
1342179358	1342188579	1342196667	1342203584	1342240315	1342248493	1342255172	1342267716
1342179630	1342188660	1342196892	1342204067	1342240318	1342248494	1342255183	1342267718
1342179644	1342188758	1342196893	1342204371	1342240319	1342248495	1342256652	1342267723
1342179654	1342188784	1342197313	1342204952	1342241087	1342248496	1342256843	1342267728
1342179660	1342188805	1342197316	1342204969	1342241158	1342248497	1342256847	1342267730
1342180930	1342188811	1342197317	1342233340	1342244177	1342248498	1342256854	1342267731
1342180933	1342188812	1342197323	1342233341	1342244178	1342248499	1342256857	1342267735
1342180948	1342188814	1342197342	1342234669	1342244202	1342248500	1342256858	1342267747
1342181915	1342188816	1342197345	1342234693	1342244840	1342248502	1342256859	1342267748
1342183360	1342188817	1342198142	1342234709	1342244844	1342249082	1342256860	1342267758
1342183362	1342188818	1342198251	1342234749	1342244845	1342249090	1342256861	1342268337
1342183400	1342188820	1342198450	1342234758	1342244856	1342249103	1342256863	1342268344
1342183401	1342189422	1342198451	1342234802	1342245144	1342249105	1342256867	1342268345
1342183403	1342189687	1342198575	1342234803	1342245437	1342249117	1342256871	1342268372
1342183480	1342191181	1342199329	1342234877	1342245517	1342249224	1342257361	1342268373
1342183481	1342192058	1342199381	1342234883	1342245561	1342249258	1342257362	1342268374
1342184379	1342192059	1342199784	1342234895	1342245563	1342250236	1342257368	1342268404
1342184387	1342192061	1342199792	1342234931	1342245580	1342250324	1342257369	1342270200
1342185791	1342192097	1342200202	1342236129	1342245905	1342250325	1342258348	1342270202
1342185792	1342192098	1342200228	1342236130	1342246580	1342250347	1342258349	1342270204
1342185793	1342192099	1342201135	1342236232	1342246588	1342250623	1342258350	1342270205
1342185794	1342193010	1342201145	1342236234	1342246589	1342250637	1342258351	1342270206
1342185908	1342193788	1342201146	1342236235	1342246596	1342250643	1342258352	1342270207
1342185909	1342193790	1342201255	1342236236	1342246632	1342250780	1342258378	1342270294
1342185938	1342195282	1342201256	1342236240	1342247216	1342250786	1342258391	1342270325
1342186116	1342195283	1342201257	1342236252	1342247220	1342250802	1342259388	1342270326
1342186293	1342195286	1342201258	1342236257	1342247232	1342250803	1342259414	1342270335
1342186490	1342195305	1342201259	1342237500	1342247236	1342251687	1342259418	1342270336
1342186507	1342195665	1342201260	1342237516	1342247238	1342251953	1342259419	
1342186522	1342195675	1342201261	1342237518	1342247275	1342251954	1342259420	
1342186523	1342195750	1342201262	1342237550	1342247276	1342253388	1342259430	
1342186524	1342195751	1342201263	1342237553	1342247277	1342253411	1342261487	
1342186525	1342195856	1342201324	1342237563	1342247859	1342253415	1342261495	
1342186526	1342195857	1342201379	1342238251	1342247860	1342253416	1342261506	
1342187173	1342195858	1342201438	1342238269	1342247861	1342253433	1342261597	
1342187186	1342195859	1342201439	1342238302	1342247955	1342253434	1342261713	
1342187261	1342195860	1342201440	1342238303	1342247959	1342253435	1342263811	
1342187262	1342195861	1342201441	1342238306	1342247975	1342254051	1342263813	
1342187319	1342195862	1342201442	1342239053	1342247987	1342254068	1342263863	
1342187320	1342195863	1342201443	1342239271	1342247993	1342254069	1342265294	

1342187448	1342195864	1342201444	1342239272	1342247994	1342254082	1342265298	
1342187449	1342195933	1342202207	1342239273	1342247995	1342254502	1342265332	
1342187509	1342195934	1342202208	1342239786	1342247996	1342254514	1342265333	
1342187511	1342195938	1342202212	1342239812	1342247997	1342254639	1342265344	
1342187514	1342195945	1342202219	1342239814	1342247998	1342255059	1342265346	
1342187516	1342196660	1342203076	1342239900	1342248000	1342255075	1342265385	
1342187522	1342196661	1342203092	1342239979	1342248001	1342255105	1342265386	
1342187523	1342196662	1342203285	1342240025	1342248005	1342255133	1342265387	

Table 1: A tabulation of all ObsIDs with serendipitous asteroid detections by the SPIRE photometer that were used in the compilation of the catalogue.

More detail is given in Table 2 where, for each ObsID, we list the observing mode, the OD on which the observation was obtained, the proposal name that contained the ObsID, the access status (observations with “Restricted” status were made in special, usually non-standard modes and are not considered science grade, although usable by expert users), the main target of the observation (if identifiable, when no name is given the observation is usually a cosmological field) and a link to the postcard image. Although the postcard image is not of science quality, it is useful for making a quick assessment of the data and also gives information on the requested coordinates, plus a coordinate grid for the observation.

8.6. Observational circumstances and the limitations that they impose

Herschel’s solar aspect angle limitations meant that SSOs could not be observed close to opposition, when they were closest to Herschel and brightest. Effectively, there was a hard limit at 60° either side of the opposition point. So, for example, in 2010, 1 Ceres came into view for Herschel on 9th February and left visibility on April 23rd, re-entering visibility on August 14th, before leaving again on October 28th. In other words, it was visible for two periods of approximately two months each year. In 2010, Ceres reached opposition on June 19th, at a Herschelcentric distance of 1.815AU, but observable no closer than 2.16AU pre-opposition and 2.24AU post-opposition. In reality, during the majority of the mission, scheduling was further limited around the opposition point as the base of the Service Module was oriented towards the Sun at these times, causing heating of the startracker baseplate and reduced pointing accuracy for some time after the telescope was slewed away to cooler attitudes. Thus, observations at so-called “hot betas” were increasingly restricted as knowledge of the telescope pointing improved and the effects of pointing towards hot betas were increasingly understood.

Under the revised rules for Hot Betas during the second half of the mission in particular, no observations were permitted, unless strongly justified, within $\pm 75^\circ$ of the opposition point, reducing the visibility window for Ceres by a further 13 days and limiting the minimum Herschelcentric distance at which it could be observed to 2.35AU and 2.46AU respectively pre- and post-opposition. Given that the received flux scales as the inverse square of the Herschelcentric distance, Herschel’s sensitivity to SSOs in the Main Belt was reduced by $\approx 40\%$. Evidently, for more distant objects, there is proportionally less variation of the Herschelcentric distance away from opposition, so the sensitivity loss was reduced.

The best-observed objects (1 Ceres, 4 Vesta and 2512 Tavastia (1940 GG)), either have clusters of observations twice each year, or multiple observations when crossing a survey field, or a combination of the two. We can see this effect in Figure 2 and Figure 3 below.

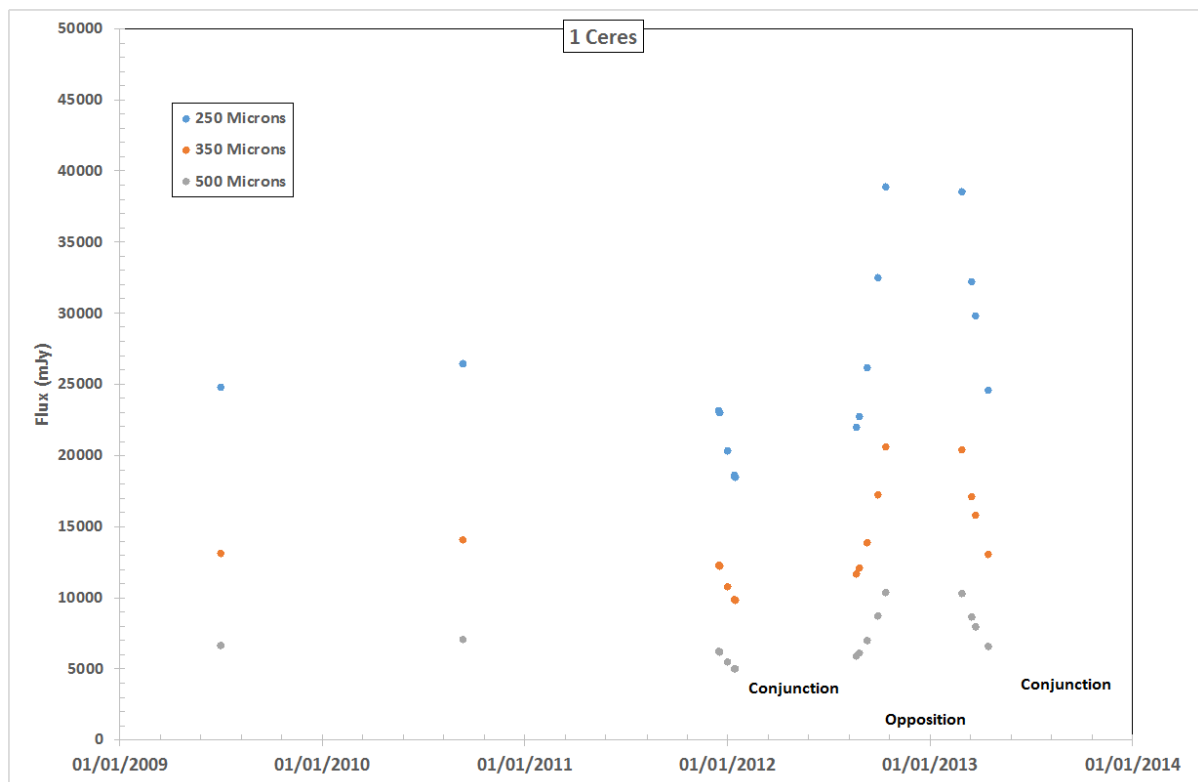


Figure 2: The raw flux curve for 1 Ceres. We see the clustering of data points into visibility windows, with long gaps in between and the influence of the changing Herschelcentric distance on the observed fluxes. The highest fluxes are measured closest to opposition while, close to conjunction, the Herschelcentric distance increases considerably and the observed fluxes reach a minimum.

There are groups of points clustered in different visibility windows, with a variation of a factor of four in the observed flux between the points closest to conjunction and the points closest to opposition.

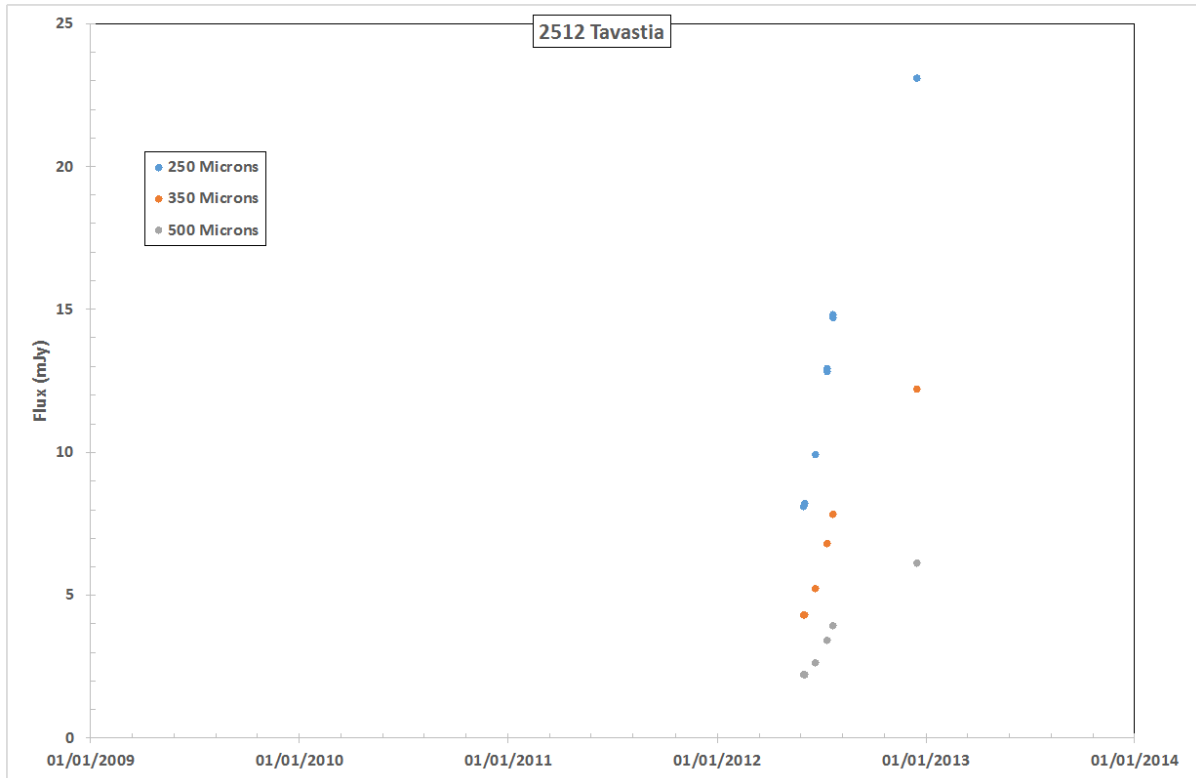


Figure 3: The raw flux curve of the asteroid 2512 Tavastia. In this case the asteroid was crossing a survey field with the result that there are many observations clustered almost exclusively in a single visibility window. Although found in eighteen different ObsIDs there are, effectively, only six independent epochs (ODs 1116, 1117, 1135, 1156, 1166 & 1314), with multiple points in the fourth and fifth of these ODs.

8.7. Solar System Objects with observations at ten or more epochs

The following objects, listed in order of decreasing number of observations, are detected in ten or more ObsIDs:

No. Observations	Objects
19	1 Ceres
18	4 Vesta
17	2512 Tavastia (1940 GG)
16	537 Pauly (1904 OG), 1694 Kaiser (1934 SB), 292 Ludovica, 2583 Fatyanov (1975 XA3), 4754 Panthoos (5010 T-3), 19926 (1979 YQ)
15	7857 Lagerros (1978 QC3)
14	3492 Petra-Pepi (1985 DQ), 597 Bandusia (1906 UB), 1449 Virtanen (1938 DO), 3451 Mentor (1984 HA1)

13	2132 Zhukov (1975 TW3), 2 Pallas, 438 Zeuxo (1898 DU), 1669 Dagmar (1934 RS), 226 Weringia
12	5035 Swift (1991 UX), 6697 Celentano (1987 HM1), 7023 Heiankyo (1992 KE), 2332 Kalm (1940 GH), 889 Erynia (1918 DG), 19 Fortuna, 731 Sorga (1912 OQ), 508 Princetonia (1903 LQ), 744 Aguntina (1913 QW), 876 Scott (1917 CH), 1453 Fennia (1938 ED1), 1723 Klemola (1936 FX), 2734 Hasek (1976 GJ3), 12391 Eoadachi (1994 WE2), 29189 Udinsk (1990 UY3), 47171 (1999 TC36)
11	2384 Schulhof (1943 EC1), 5518 Mariobotta (1989 YF), 5936 Khadzhinov (1979 FQ2), 6 Hebe, 1618 Dawn (1948 NF), 2349 Kurchenko (1970 OG)
10	11554 Asios (1993 BZ12), 932 Hooveria (1920 GV), 145 Adeona, 5574 Seagrave (1984 FS), 5629 Kuwana (1993 DA1), 7456 Doressoundiram (1982 OD)

Table 2: SSOs detected in 10 or more ObsIDs.

8.8. ObsIDs used in the compilation of the catalogue

Table 2 below gives the details of the different ObsIDs used, the observing mode, the OD in which the observation was made, the proposal under which it was obtained, its access status (note that a significant number of the ObsIDs used are “Restricted” and thus only available to expert users such as the members of the SPIRE ICC who compiled the Herschel SPIRE Point Source Catalogue), the target of the observation (if one is identifiable) and a link to the postcard image that allows the user to assess the quality of the observation.

ObsId	Observing mode	OD	Proposal	Access	Main target	URL Postcard image
1342179029	SpirePhotLargeScan	42	Calibration_copspire_15	Restricted	M66 ²	http://archives.esac.esa.int/hsa/whsa-tap-server/data?observation_oid=8546856&username=mkidger&RETRIEVAL_TYPE=POSTCARD&DATA_RETRIEVAL_ORIGIN=IGNORE
1342179356	SpirePhotLargeScan	50	Calibration_copspire_18	Restricted	1 Ceres	http://archives.esac.esa.int/hsa/whsa-tap-server/data?observation_oid=8510941&username=mkidger&RETRIEVAL_TYPE=POSTCARD&DATA_RETRIEVAL_ORIGIN=IGNORE
1342179358	SpirePhotLargeScan	50	Calibration_copspire_18	Restricted	1 Ceres	http://archives.esac.esa.int/hsa/whsa-tap-server/data?observation_oid=8510788&username=mkidger&RETRIEVAL_TYPE=POSTCARD&DATA_RETRIEVAL_ORIGIN=IGNORE
1342179630	SpirePhotLargeScan	56	Calibration_copspire_19	Restricted		http://archives.esac.esa.int/hsa/whsa-tap-server/data?observation_oid=8546810&username=mkidger&RETRIEVAL_TYPE=POSTCARD&DATA_RETRIEVAL_ORIGIN=IGNORE
1342179644	SpirePhotLargeScan	56	Calibration_copspire_19	Restricted		http://archives.esac.esa.int/hsa/whsa-tap-server/data?observation_oid=8546800&username=mkidger&RETRIEVAL_TYPE=POSTCARD&DATA_RETRIEVAL_ORIGIN=IGNORE
1342179654	SpirePhotLargeScan	56	Calibration_copspire_19	Restricted		http://archives.esac.esa.int/hsa/whsa-tap-server/data?observation_oid=8546786&username=mkidger&RETRIEVAL_TYPE=POSTCARD&DATA_RETRIEVAL_ORIGIN=IGNORE
1342179660	SpirePhotLargeScan	56	Calibration_copspire_19	Restricted		http://archives.esac.esa.int/hsa/whsa-tap-server/data?observation_oid=8546787&username=mkidger&RETRIEVAL_TYPE=POSTCARD&DATA_RETRIEVAL_ORIGIN=IGNORE
1342180930	SpirePhotLargeScan	76	Calibration_pvspire_4	Restricted	19 Fortuna	http://archives.esac.esa.int/hsa/whsa-tap-server/data?observation_oid=8511872&username=mkidger&RETRIEVAL_TYPE=POSTCARD&DATA_RETRIEVAL_ORIGIN=IGNORE
1342180933	SpirePhotLargeScan	77	Calibration_pvspire_4	Restricted	19 Fortuna	http://archives.esac.esa.int/hsa/whsa-tap-server/data?observation_oid=8511656&username=mkidger&RETRIEVAL_T

² Note that this was the SPIRE First Light image.

						YPE=POSTCARD&DATA RETRIEVAL ORIGIN=IGNORE
1342180948	SpirePhotLargeScan	77	Calibration_pvspire_4	Restricted	19 Fortuna	http://archives.esac.esa.int/hsa/whsa-tap-server/data?observation_oid=8511846&username=mkidger&RETRIEVAL_TYPE=POSTCARD&DATA RETRIEVAL ORIGIN=IGNORE
1342181915	SpirePhotLargeScan	89	Calibration_pvspire_10	Restricted		http://archives.esac.esa.int/hsa/whsa-tap-server/data?observation_oid=8512337&username=mkidger&RETRIEVAL_TYPE=POSTCARD&DATA RETRIEVAL ORIGIN=IGNORE
1342183360	SpirePhotLargeScan	116	Calibration_pvspire_19	Public	Milky Way in Scorpio	http://archives.esac.esa.int/hsa/whsa-tap-server/data?observation_oid=8612246&username=mkidger&RETRIEVAL_TYPE=POSTCARD&DATA RETRIEVAL ORIGIN=IGNORE
1342183362	SpirePhotLargeScan	116	Calibration_pvspire_19	Public	Milky Way in Scorpio	http://archives.esac.esa.int/hsa/whsa-tap-server/data?observation_oid=8612279&username=mkidger&RETRIEVAL_TYPE=POSTCARD&DATA RETRIEVAL ORIGIN=IGNORE
1342183400	SpirePhotLargeScan	116	Calibration_pvspire_19	Public	19 Fortuna	http://archives.esac.esa.int/hsa/whsa-tap-server/data?observation_oid=8512744&username=mkidger&RETRIEVAL_TYPE=POSTCARD&DATA RETRIEVAL ORIGIN=IGNORE
1342183401	SpirePhotLargeScan	116	Calibration_pvspire_19	Public	19 Fortuna	http://archives.esac.esa.int/hsa/whsa-tap-server/data?observation_oid=8512767&username=mkidger&RETRIEVAL_TYPE=POSTCARD&DATA RETRIEVAL ORIGIN=IGNORE
1342183403	SpirePhotLargeScan	116	Calibration_pvspire_19	Public	19 Fortuna	http://archives.esac.esa.int/hsa/whsa-tap-server/data?observation_oid=8513522&username=mkidger&RETRIEVAL_TYPE=POSTCARD&DATA RETRIEVAL ORIGIN=IGNORE
1342183480	SpirePhotLargeScan	117	Calibration_pvspire_20	Public	Milky Way in Scorpio	http://archives.esac.esa.int/hsa/whsa-tap-server/data?observation_oid=8612310&username=mkidger&RETRIEVAL_TYPE=POSTCARD&DATA RETRIEVAL ORIGIN=IGNORE
1342183481	SpirePhotLargeScan	117	Calibration_pvspire_21	Public	Milky Way in Scorpio	http://archives.esac.esa.int/hsa/whsa-tap-server/data?observation_oid=8612343&username=mkidger&RETRIEVAL_TYPE=POSTCARD&DATA RETRIEVAL ORIGIN=IGNORE
1342184379	SpirePhotLargeScan	134	Calibration_pvspire_30	Public	NGC6302	http://archives.esac.esa.int/hsa/whsa-tap-server/data?observation_oid=8612132&username=mkidger&RETRIEVAL_TYPE=POSTCARD&DATA RETRIEVAL ORIGIN=IGNORE
1342184387	SpirePhotLargeScan	134	Calibration_pvspire_30	Public	CRL618	http://archives.esac.esa.int/hsa/whsa-tap-server/data?observation_oid=8611917&username=mkidger&RETRIEVAL_TYPE=POSTCARD&DATA RETRIEVAL ORIGIN=IGNORE
1342187524	SpirePhotLargeScan	201	SDP_thmuelle_3	Public	136472 Makemake	http://archives.esac.esa.int/hsa/whsa-tap-server/data?observation_oid=8513180&username=mkidger&RETRIEVAL_TYPE=POSTCARD&DATA RETRIEVAL ORIGIN=IGNORE
1342187525	SpirePhotLargeScan	201	SDP_thmuelle_3	Public	136472 Makemake	http://archives.esac.esa.int/hsa/whsa-tap-server/data?observation_oid=8513379&username=mkidger&RETRIEVAL_TYPE=POSTCARD&DATA RETRIEVAL ORIGIN=IGNORE

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1342187579	SpirePhotLargeScan	226	KPOT_eegami_1	Public	Abell 68	http://archives.esac.esa.int/hsa/whsa-tap-server/data?observation_oid=8513328&username=mkidger&RETRIEVAL_TYPE=POSTCARD&DATA RETRIEVAL ORIGIN=IGNORE
1342188660	SpirePhotLargeScan	227	KPOT_eegami_1	Public	CL016+16	http://archives.esac.esa.int/hsa/whsa-tap-server/data?observation_oid=8513438&username=mkidger&RETRIEVAL_TYPE=POSTCARD&DATA RETRIEVAL ORIGIN=IGNORE
1342188758	SpirePhotLargeScan	231	KPOT_rkennicu_1	Public	NGC4559	http://archives.esac.esa.int/hsa/whsa-tap-server/data?observation_oid=8513702&username=mkidger&RETRIEVAL_TYPE=POSTCARD&DATA RETRIEVAL ORIGIN=IGNORE
1342188784	SpirePhotLargeScan	231	KPGT_seales01_1	Public	NGC3666	http://archives.esac.esa.int/hsa/whsa-tap-server/data?observation_oid=8513535&username=mkidger&RETRIEVAL_TYPE=POSTCARD&DATA RETRIEVAL ORIGIN=IGNORE
1342188805	SpirePhotLargeScan	232	KPGT_seales01_1	Public	NGC4532	http://archives.esac.esa.int/hsa/whsa-tap-server/data?observation_oid=8513495&username=mkidger&RETRIEVAL_TYPE=POSTCARD&DATA RETRIEVAL ORIGIN=IGNORE
1342188811	SpirePhotLargeScan	232	KPGT_seales01_1	Public	NGC4123	http://archives.esac.esa.int/hsa/whsa-tap-server/data?observation_oid=8617932&username=mkidger&RETRIEVAL_TYPE=POSTCARD&DATA RETRIEVAL ORIGIN=IGNORE
1342188812	SpirePhotLargeScan	232	KPGT_seales01_1	Public	NGC4116	http://archives.esac.esa.int/hsa/whsa-tap-server/data?observation_oid=8617936&username=mkidger&RETRIEVAL_TYPE=POSTCARD&DATA RETRIEVAL ORIGIN=IGNORE
1342188814	SpirePhotLargeScan	232	KPGT_seales01_1	Public	NGC4030	http://archives.esac.esa.int/hsa/whsa-tap-server/data?observation_oid=8513665&username=mkidger&RETRIEVAL_TYPE=POSTCARD&DATA RETRIEVAL ORIGIN=IGNORE
1342188816	SpirePhotLargeScan	232	KPGT_seales01_1	Public	NGC4697	http://archives.esac.esa.int/hsa/whsa-tap-server/data?observation_oid=8513738&username=mkidger&RETRIEVAL_TYPE=POSTCARD&DATA RETRIEVAL ORIGIN=IGNORE
1342188817	SpirePhotLargeScan	232	KPGT_seales01_1	Public	NGC4731	http://archives.esac.esa.int/hsa/whsa-tap-server/data?observation_oid=8515211&username=mkidger&RETRIEVAL_TYPE=POSTCARD&DATA RETRIEVAL ORIGIN=IGNORE
1342188818	SpirePhotLargeScan	232	KPGT_seales01_1	Public	NGC4941	http://archives.esac.esa.int/hsa/whsa-tap-server/data?observation_oid=8515210&username=mkidger&RETRIEVAL_TYPE=POSTCARD&DATA RETRIEVAL ORIGIN=IGNORE
1342188820	SpirePhotLargeScan	232	KPGT_seales01_1	Public	NGC5334	http://archives.esac.esa.int/hsa/whsa-tap-server/data?observation_oid=8515837&username=mkidger&RETRIEVAL_TYPE=POSTCARD&DATA RETRIEVAL ORIGIN=IGNORE
1342189422	SpirePhotLargeScan	249	KPOT_rkennicu_1	Public	NGC0584	http://archives.esac.esa.int/hsa/whsa-tap-server/data?observation_oid=8516197&username=mkidger&RETRIEVAL_TYPE=POSTCARD&DATA RETRIEVAL ORIGIN=IGNORE

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1342189687	SpirePhotLargeScan	257	Calibration_rpspire_5	Public	3 Juno	http://archives.esac.esa.int/hsa/whsa-tap-server/data?observation_oid=8513682&username=mkidger&RETRIEVAL_TYPE=POSTCARD&DATA RETRIEVAL ORIGIN=IGNORE
1342191181	SpirePhotLargeScan	287	KPGT_mgroen01_1	Public	Crab	http://archives.esac.esa.int/hsa/whsa-tap-server/data?observation_oid=8617939&username=mkidger&RETRIEVAL_TYPE=POSTCARD&DATA RETRIEVAL ORIGIN=IGNORE
1342192058	SpirePhotLargeScan	301	KPGT_mgroen01_1	Public	Sn Kepler	http://archives.esac.esa.int/hsa/whsa-tap-server/data?observation_oid=8617944&username=mkidger&RETRIEVAL_TYPE=POSTCARD&DATA RETRIEVAL ORIGIN=IGNORE
1342192059	SpirePhotLargeScan	301	KPGT_aabergel_1	Public		http://archives.esac.esa.int/hsa/whsa-tap-server/data?observation_oid=8617945&username=mkidger&RETRIEVAL_TYPE=POSTCARD&DATA RETRIEVAL ORIGIN=IGNORE
1342192061	SpirePhotLargeScan	301	KPGT_okrause_1	Public	Galactic Centre	http://archives.esac.esa.int/hsa/whsa-tap-server/data?observation_oid=8617946&username=mkidger&RETRIEVAL_TYPE=POSTCARD&DATA RETRIEVAL ORIGIN=IGNORE
1342196663	SpirePhotLargeScan	369	KPGT_dlutz_1	Public		http://archives.esac.esa.int/hsa/whsa-tap-server/data?observation_oid=8617948&username=mkidger&RETRIEVAL_TYPE=POSTCARD&DATA RETRIEVAL ORIGIN=IGNORE
1342196664	SpirePhotLargeScan	369	KPGT_dlutz_1	Public		http://archives.esac.esa.int/hsa/whsa-tap-server/data?observation_oid=8617949&username=mkidger&RETRIEVAL_TYPE=POSTCARD&DATA RETRIEVAL ORIGIN=IGNORE
1342196667	SpirePhotLargeScan	369	Calibration_rpspire_16	Public	4 Vesta	http://archives.esac.esa.int/hsa/whsa-tap-server/data?observation_oid=8514042&username=mkidger&RETRIEVAL_TYPE=POSTCARD&DATA RETRIEVAL ORIGIN=IGNORE
1342196892	SpirePhotSmallScan	374	Calibration_rpspire_17	Public	6 Hebe	http://archives.esac.esa.int/hsa/whsa-tap-server/data?observation_oid=8514519&username=mkidger&RETRIEVAL_TYPE=POSTCARD&DATA RETRIEVAL ORIGIN=IGNORE
1342196893	SpirePhotLargeScan	374	Calibration_rpspire_17	Public	6 Hebe	http://archives.esac.esa.int/hsa/whsa-tap-server/data?observation_oid=8513934&username=mkidger&RETRIEVAL_TYPE=POSTCARD&DATA RETRIEVAL ORIGIN=IGNORE
1342197313	SpirePhotSmallScan	381	Calibration_pvpspire_69	Public	Mars	http://archives.esac.esa.int/hsa/whsa-tap-server/data?observation_oid=8513870&username=mkidger&RETRIEVAL_TYPE=POSTCARD&DATA RETRIEVAL ORIGIN=IGNORE
1342197316	SpirePhotLargeScan	381	Calibration_rpspire_17	Public	4 Vesta	http://archives.esac.esa.int/hsa/whsa-tap-server/data?observation_oid=8513896&username=mkidger&RETRIEVAL_TYPE=POSTCARD&DATA RETRIEVAL ORIGIN=IGNORE
1342197317	SpirePhotLargeScan	381	Calibration_rpspire_17	Public	4 Vesta	http://archives.esac.esa.int/hsa/whsa-tap-server/data?observation_oid=8513912&username=mkidger&RETRIEVAL_TYPE=POSTCARD&DATA RETRIEVAL ORIGIN=IGNORE

						YPE=POSTCARD&DATA RETRIEVAL ORIGIN=IGNORE
1342197323	SpirePhotSmallScan	381	Calibration_pvspire_69	Public	Mars	http://archives.esac.esa.int/hsa/whsa-tap-server/data?observation_oid=8617958&username=mkidger&RETRIEVAL_TYPE=POSTCARD&DATA RETRIEVAL ORIGIN=IGNORE
1342197342	SpirePhotLargeScan	382	Calibration_rpspire_17	Public	Uranus	http://archives.esac.esa.int/hsa/whsa-tap-server/data?observation_oid=8617959&username=mkidger&RETRIEVAL_TYPE=POSTCARD&DATA RETRIEVAL ORIGIN=IGNORE
1342197345	SpirePhotLargeScan	382	Calibration_pvspire_69	Public	Uranus	http://archives.esac.esa.int/hsa/whsa-tap-server/data?observation_oid=8617960&username=mkidger&RETRIEVAL_TYPE=POSTCARD&DATA RETRIEVAL ORIGIN=IGNORE
1342198142	SpirePhotLargeScan	393	Calibration_rpspire_18	Public	Uranus	http://archives.esac.esa.int/hsa/whsa-tap-server/data?observation_oid=8617961&username=mkidger&RETRIEVAL_TYPE=POSTCARD&DATA RETRIEVAL ORIGIN=IGNORE
1342198251	SpirePhotSmallScan	395	KPOT_thmuelle_1	Public	136472 Makemake	http://archives.esac.esa.int/hsa/whsa-tap-server/data?observation_oid=8543236&username=mkidger&RETRIEVAL_TYPE=POSTCARD&DATA RETRIEVAL ORIGIN=IGNORE
1342198450	SpirePhotLargeScan	392	KPOT_rkennicu_1	Public	NGC3338	http://archives.esac.esa.int/hsa/whsa-tap-server/data?observation_oid=8618005&username=mkidger&RETRIEVAL_TYPE=POSTCARD&DATA RETRIEVAL ORIGIN=IGNORE
1342198451	SpirePhotSmallScan	392	KPOT_thmuelle_1	Public	136472 Makemake	http://archives.esac.esa.int/hsa/whsa-tap-server/data?observation_oid=8618022&username=mkidger&RETRIEVAL_TYPE=POSTCARD&DATA RETRIEVAL ORIGIN=IGNORE
1342198575	SpirePhotLargeScan	402	Calibration_rpspire_19	Public	4 Vesta	http://archives.esac.esa.int/hsa/whsa-tap-server/data?observation_oid=8618047&username=mkidger&RETRIEVAL_TYPE=POSTCARD&DATA RETRIEVAL ORIGIN=IGNORE
1342199329	SpirePhotLargeScan	411	Calibration_rpspire_19	Public	4 Vesta	http://archives.esac.esa.int/hsa/whsa-tap-server/data?observation_oid=8638706&username=mkidger&RETRIEVAL_TYPE=POSTCARD&DATA RETRIEVAL ORIGIN=IGNORE
1342199381	SpirePhotLargeScan	411	Calibration_rpspire_19	Public	6 Hebe	http://archives.esac.esa.int/hsa/whsa-tap-server/data?observation_oid=8618071&username=mkidger&RETRIEVAL_TYPE=POSTCARD&DATA RETRIEVAL ORIGIN=IGNORE
1342199784	SpirePhotLargeScan	417	Calibration_rpspire_20	Public	2 Pallas	http://archives.esac.esa.int/hsa/whsa-tap-server/data?observation_oid=8618072&username=mkidger&RETRIEVAL_TYPE=POSTCARD&DATA RETRIEVAL ORIGIN=IGNORE
1342199792	SpirePhotLargeScan	417	Calibration_rpspire_20	Public	Uranus	http://archives.esac.esa.int/hsa/whsa-tap-server/data?observation_oid=8618074&username=mkidger&RETRIEVAL_TYPE=POSTCARD&DATA RETRIEVAL ORIGIN=IGNORE
1342203574	SpirePhotSmallScan	467	KPOT_nevans_1	Public	Milky Way in Scorpio	http://archives.esac.esa.int/hsa/whsa-tap-server/data?observation_oid=8618076&username=mkidger&RETRIEVAL_TYPE=POSTCARD&DATA RETRIEVAL ORIGIN=IGNORE

						YPE=POSTCARD&DATA RETRIEVAL ORIGIN=IGNORE
1342203575	SpirePhotSmallScan	467	KPOT_nevans_1	Public	Milky Way in Scorpio	http://archives.esac.esa.int/hsa/whsa-tap-server/data?observation_oid=8618077&username=mkidger&RETRIEVAL_TYPE=POSTCARD&DATA RETRIEVAL ORIGIN=IGNORE
1342203584	SpirePhotSmallScan	467	Calibration_rpspire_24	Public	2 Pallas	http://archives.esac.esa.int/hsa/whsa-tap-server/data?observation_oid=8638708&username=mkidger&RETRIEVAL_TYPE=POSTCARD&DATA RETRIEVAL ORIGIN=IGNORE
1342204067	SpirePhotSmallScan	479	Calibration_rpspire_25	Public	88 Thisbe	http://archives.esac.esa.int/hsa/whsa-tap-server/data?observation_oid=8618080&username=mkidger&RETRIEVAL_TYPE=POSTCARD&DATA RETRIEVAL ORIGIN=IGNORE
1342204371	SpirePhotLargeScan	486	Calibration_rpspire_26	Public	1 Ceres	http://archives.esac.esa.int/hsa/whsa-tap-server/data?observation_oid=8618088&username=mkidger&RETRIEVAL_TYPE=POSTCARD&DATA RETRIEVAL ORIGIN=IGNORE
1342204952	SpirePhotLargeScan	495	KPOT_okrause_1	Public	Milky Way in Scorpio/Saggitarius	http://archives.esac.esa.int/hsa/whsa-tap-server/data?observation_oid=8514559&username=mkidger&RETRIEVAL_TYPE=POSTCARD&DATA RETRIEVAL ORIGIN=IGNORE
1342204969	SpirePhotLargeScan	495	KPOT_gsmith01_1	Public	Abell 586	http://archives.esac.esa.int/hsa/whsa-tap-server/data?observation_oid=8515452&username=mkidger&RETRIEVAL_TYPE=POSTCARD&DATA RETRIEVAL ORIGIN=IGNORE
1342233340	SpirePhotSmallScan	931	Calibration_rpspire_88	Public	8 Flora	http://archives.esac.esa.int/hsa/whsa-tap-server/data?observation_oid=8515827&username=mkidger&RETRIEVAL_TYPE=POSTCARD&DATA RETRIEVAL ORIGIN=IGNORE
1342233341	SpirePhotSmallScan	931	Calibration_rpspire_88	Public	93 Minerva	http://archives.esac.esa.int/hsa/whsa-tap-server/data?observation_oid=8612316&username=mkidger&RETRIEVAL_TYPE=POSTCARD&DATA RETRIEVAL ORIGIN=IGNORE
1342234669	SpirePhotLargeScan	949	Calibration_rpspire_90	Public	Neptune	http://archives.esac.esa.int/hsa/whsa-tap-server/data?observation_oid=8612493&username=mkidger&RETRIEVAL_TYPE=POSTCARD&DATA RETRIEVAL ORIGIN=IGNORE
1342234693	SpirePhotSmallScan	949	OT1_dfarrah_1	Public		http://archives.esac.esa.int/hsa/whsa-tap-server/data?observation_oid=8515552&username=mkidger&RETRIEVAL_TYPE=POSTCARD&DATA RETRIEVAL ORIGIN=IGNORE
1342234709	SpirePhotSmallScan	949	OT1_dsanders_1	Public		http://archives.esac.esa.int/hsa/whsa-tap-server/data?observation_oid=8612018&username=mkidger&RETRIEVAL_TYPE=POSTCARD&DATA RETRIEVAL ORIGIN=IGNORE
1342234749	SpirePhotLargeScan	949	GT2_mviero_1	Public		http://archives.esac.esa.int/hsa/whsa-tap-server/data?observation_oid=8543530&username=mkidger&RETRIEVAL_TYPE=POSTCARD&DATA RETRIEVAL ORIGIN=IGNORE
1342234758	SpirePhotSmallScan	949	OT1_dsanders_1	Public	NGC7591	http://archives.esac.esa.int/hsa/whsa-tap-server/data?observation_oid=8516005&username=mkidger&RETRIEVAL_TYPE=POSTCARD&DATA RETRIEVAL ORIGIN=IGNORE

						YPE=POSTCARD&DATA RETRIEVAL ORIGIN=IGNORE
1342234802	SpirePhotSmallScan	948	Calibration_rpspire_90	Public	47 Aglaja	http://archives.esac.esa.int/hsa/whsa-tap-server/data?observation_oid=8515998&username=mkidger&RETRIEVAL_TYPE=POSTCARD&DATA RETRIEVAL ORIGIN=IGNORE
1342234803	SpirePhotSmallScan	948	Calibration_rpspire_90	Public	37 Fides	http://archives.esac.esa.int/hsa/whsa-tap-server/data?observation_oid=8516178&username=mkidger&RETRIEVAL_TYPE=POSTCARD&DATA RETRIEVAL ORIGIN=IGNORE
1342234877	SpirePhotSmallScan	948	OT1_hnetzer_2	Public		http://archives.esac.esa.int/hsa/whsa-tap-server/data?observation_oid=8516589&username=mkidger&RETRIEVAL_TYPE=POSTCARD&DATA RETRIEVAL ORIGIN=IGNORE
1342234883	SpirePhotLargeScan	948	OT1_dsanders_1	Public	NGC4418	http://archives.esac.esa.int/hsa/whsa-tap-server/data?observation_oid=8516521&username=mkidger&RETRIEVAL_TYPE=POSTCARD&DATA RETRIEVAL ORIGIN=IGNORE
1342234895	SpirePhotSmallScan	948	OT1_hnetzer_2	Public		http://archives.esac.esa.int/hsa/whsa-tap-server/data?observation_oid=8516492&username=mkidger&RETRIEVAL_TYPE=POSTCARD&DATA RETRIEVAL ORIGIN=IGNORE
1342234931	SpirePhotSmallScan	948	Calibration_rpspire_90	Public	1 Ceres	http://archives.esac.esa.int/hsa/whsa-tap-server/data?observation_oid=8541665&username=mkidger&RETRIEVAL_TYPE=POSTCARD&DATA RETRIEVAL ORIGIN=IGNORE
1342240277	SpirePhotSmallScan	1026	OT2_ellouc_2	Public	Pluto	http://archives.esac.esa.int/hsa/whsa-tap-server/data?observation_oid=8516690&username=mkidger&RETRIEVAL_TYPE=POSTCARD&DATA RETRIEVAL ORIGIN=IGNORE
1342240282	SpirePhotSmallScan	1027	Calibration_rpspire_100	Public	20 Massalia	http://archives.esac.esa.int/hsa/whsa-tap-server/data?observation_oid=8516732&username=mkidger&RETRIEVAL_TYPE=POSTCARD&DATA RETRIEVAL ORIGIN=IGNORE
1342240315	SpirePhotSmallScan	1027	OT2_ellouc_2	Public	Pluto	http://archives.esac.esa.int/hsa/whsa-tap-server/data?observation_oid=8516755&username=mkidger&RETRIEVAL_TYPE=POSTCARD&DATA RETRIEVAL ORIGIN=IGNORE
1342240318	SpirePhotSmallScan	1027	OT2_ellouc_2	Public	Pluto	http://archives.esac.esa.int/hsa/whsa-tap-server/data?observation_oid=8516692&username=mkidger&RETRIEVAL_TYPE=POSTCARD&DATA RETRIEVAL ORIGIN=IGNORE
1342240319	SpirePhotSmallScan	1027	Calibration_rpspire_100	Public	19 Fortuna	http://archives.esac.esa.int/hsa/whsa-tap-server/data?observation_oid=8613665&username=mkidger&RETRIEVAL_TYPE=POSTCARD&DATA RETRIEVAL ORIGIN=IGNORE
1342241087	SpirePhotSmallScan	1025	OT2_ellouc_2	Public	Pluto	http://archives.esac.esa.int/hsa/whsa-tap-server/data?observation_oid=8613701&username=mkidger&RETRIEVAL_TYPE=POSTCARD&DATA RETRIEVAL ORIGIN=IGNORE
1342241158	SpirePhotSmallScan	1025	OT2_ellouc_2	Public	Pluto	http://archives.esac.esa.int/hsa/whsa-tap-server/data?observation_oid=8613736&username=mkidger&RETRIEVAL_TYPE=POSTCARD&DATA RETRIEVAL ORIGIN=IGNORE

						YPE=POSTCARD&DATA RETRIEVAL ORIGIN=IGNORE
1342244177	SpirePhotSmallScan	1064	Calibration_rpspire_106	Public	65 Cybele	http://archives.esac.esa.int/hsa/whsa-tap-server/data?observation_oid=8613776&username=mkidger&RETRIEVAL_TYPE=POSTCARD&DATA RETRIEVAL ORIGIN=IGNORE
1342244178	SpirePhotSmallScan	1064	Calibration_rpspire_106	Public	54 Alexandra	http://archives.esac.esa.int/hsa/whsa-tap-server/data?observation_oid=8613816&username=mkidger&RETRIEVAL_TYPE=POSTCARD&DATA RETRIEVAL ORIGIN=IGNORE
1342244202	SpirePhotSmallScan	1063	Calibration_rpspire_106	Public	20 Massalia	http://archives.esac.esa.int/hsa/whsa-tap-server/data?observation_oid=8613862&username=mkidger&RETRIEVAL_TYPE=POSTCARD&DATA RETRIEVAL ORIGIN=IGNORE
1342244840	SpirePhotSmallScan	1074	Calibration_rpspire_109	Public	65 Cybele	http://archives.esac.esa.int/hsa/whsa-tap-server/data?observation_oid=8613907&username=mkidger&RETRIEVAL_TYPE=POSTCARD&DATA RETRIEVAL ORIGIN=IGNORE
1342244844	SpirePhotSmallScan	1074	Calibration_rpspire_109	Public	511 Davida	http://archives.esac.esa.int/hsa/whsa-tap-server/data?observation_oid=8613952&username=mkidger&RETRIEVAL_TYPE=POSTCARD&DATA RETRIEVAL ORIGIN=IGNORE
1342244845	SpirePhotSmallScan	1074	Calibration_rpspire_109	Public	19 Fortuna	http://archives.esac.esa.int/hsa/whsa-tap-server/data?observation_oid=8516708&username=mkidger&RETRIEVAL_TYPE=POSTCARD&DATA RETRIEVAL ORIGIN=IGNORE
1342244856	SpirePhotSmallScan	1075	OT1_jdrake01_1	Public	BY Cap	http://archives.esac.esa.int/hsa/whsa-tap-server/data?observation_oid=8516798&username=mkidger&RETRIEVAL_TYPE=POSTCARD&DATA RETRIEVAL ORIGIN=IGNORE
1342245144	SpirePhotSmallScan	1082	Calibration_rpspire_109	Public	10 Hygiea	http://archives.esac.esa.int/hsa/whsa-tap-server/data?observation_oid=8516870&username=mkidger&RETRIEVAL_TYPE=POSTCARD&DATA RETRIEVAL ORIGIN=IGNORE
1342245437	SpirePhotSmallScan	1089	Calibration_rpspire_113	Public	Omega Cap	http://archives.esac.esa.int/hsa/whsa-tap-server/data?observation_oid=8517246&username=mkidger&RETRIEVAL_TYPE=POSTCARD&DATA RETRIEVAL ORIGIN=IGNORE
1342245517	SpirePhotLargeScan	1093	OT2_ymatsuda_1	Public		http://archives.esac.esa.int/hsa/whsa-tap-server/data?observation_oid=8613567&username=mkidger&RETRIEVAL_TYPE=POSTCARD&DATA RETRIEVAL ORIGIN=IGNORE
1342245561	SpirePhotSmallScan	1093	OT1_eegami_4	Public		http://archives.esac.esa.int/hsa/whsa-tap-server/data?observation_oid=8613593&username=mkidger&RETRIEVAL_TYPE=POSTCARD&DATA RETRIEVAL ORIGIN=IGNORE
1342245563	SpirePhotSmallScan	1093	Calibration_rpspire_113	Public	6 Hebe	http://archives.esac.esa.int/hsa/whsa-tap-server/data?observation_oid=8613610&username=mkidger&RETRIEVAL_TYPE=POSTCARD&DATA RETRIEVAL ORIGIN=IGNORE
1342245580	SpirePhotSmallScan	1093	Calibration_rpspire_113	Public	10 Hygiea	http://archives.esac.esa.int/hsa/whsa-tap-server/data?observation_oid=8613627&username=mkidger&RETRIEVAL_TYPE=POSTCARD&DATA RETRIEVAL ORIGIN=IGNORE

						YPE=POSTCARD&DATA RETRIEVAL ORIGIN=IGNORE
1342248491	SpirePhotLargeScan	1166	OT2_mviero_2	Public		http://archives.esac.esa.int/hsa/whsa-tap-server/data?observation_oid=8613649&username=mkidger&RETRIEVAL_TYPE=POSTCARD&DATA RETRIEVAL ORIGIN=IGNORE
1342248492	SpirePhotLargeScan	1166	OT2_mviero_2	Public		http://archives.esac.esa.int/hsa/whsa-tap-server/data?observation_oid=8613675&username=mkidger&RETRIEVAL_TYPE=POSTCARD&DATA RETRIEVAL ORIGIN=IGNORE
1342248493	SpirePhotLargeScan	1166	OT2_mviero_2	Public		http://archives.esac.esa.int/hsa/whsa-tap-server/data?observation_oid=8516940&username=mkidger&RETRIEVAL_TYPE=POSTCARD&DATA RETRIEVAL ORIGIN=IGNORE
1342248494	SpirePhotLargeScan	1166	OT2_mviero_2	Public		http://archives.esac.esa.int/hsa/whsa-tap-server/data?observation_oid=8516958&username=mkidger&RETRIEVAL_TYPE=POSTCARD&DATA RETRIEVAL ORIGIN=IGNORE
1342248495	SpirePhotLargeScan	1166	OT2_mviero_2	Public		http://archives.esac.esa.int/hsa/whsa-tap-server/data?observation_oid=8517071&username=mkidger&RETRIEVAL_TYPE=POSTCARD&DATA RETRIEVAL ORIGIN=IGNORE
1342248496	SpirePhotLargeScan	1166	OT2_mviero_2	Public		http://archives.esac.esa.int/hsa/whsa-tap-server/data?observation_oid=8517340&username=mkidger&RETRIEVAL_TYPE=POSTCARD&DATA RETRIEVAL ORIGIN=IGNORE
1342248497	SpirePhotLargeScan	1166	OT2_mviero_2	Public		http://archives.esac.esa.int/hsa/whsa-tap-server/data?observation_oid=8517363&username=mkidger&RETRIEVAL_TYPE=POSTCARD&DATA RETRIEVAL ORIGIN=IGNORE
1342248498	SpirePhotLargeScan	1166	OT2_mviero_2	Public		http://archives.esac.esa.int/hsa/whsa-tap-server/data?observation_oid=8517351&username=mkidger&RETRIEVAL_TYPE=POSTCARD&DATA RETRIEVAL ORIGIN=IGNORE
1342248499	SpirePhotLargeScan	1166	OT2_mviero_2	Public		http://archives.esac.esa.int/hsa/whsa-tap-server/data?observation_oid=8517403&username=mkidger&RETRIEVAL_TYPE=POSTCARD&DATA RETRIEVAL ORIGIN=IGNORE
1342248500	SpirePhotLargeScan	1166	OT2_mviero_2	Public		http://archives.esac.esa.int/hsa/whsa-tap-server/data?observation_oid=8517381&username=mkidger&RETRIEVAL_TYPE=POSTCARD&DATA RETRIEVAL ORIGIN=IGNORE
1342248502	SpirePhotSmallScan	1166	Calibration_rpspire_126	Public	7 Iris	http://archives.esac.esa.int/hsa/whsa-tap-server/data?observation_oid=8517371&username=mkidger&RETRIEVAL_TYPE=POSTCARD&DATA RETRIEVAL ORIGIN=IGNORE
1342248582	SpirePhotSmallScan	1179	OT1_msikora_1	Public	AO 0235+16	http://archives.esac.esa.int/hsa/whsa-tap-server/data?observation_oid=8517553&username=mkidger&RETRIEVAL_TYPE=POSTCARD&DATA RETRIEVAL ORIGIN=IGNORE
1342248590	SpirePhotSmallScan	1179	Calibration_rpspire_126	Public	4 Vesta	http://archives.esac.esa.int/hsa/whsa-tap-server/data?observation_oid=8517695&username=mkidger&RETRIEVAL_TYPE=POSTCARD&DATA RETRIEVAL ORIGIN=IGNORE

						YPE=POSTCARD&DATA RETRIEVAL ORIGIN=IGNORE
1342249103	SpirePhotLargeScan	1180	OT2_mviero_2	Public		http://archives.esac.esa.int/hsa/whsa-tap-server/data?observation_oid=8517517&username=mkidger&RETRIEVAL_TYPE=POSTCARD&DATA RETRIEVAL ORIGIN=IGNORE
1342249105	SpirePhotLargeScan	1180	OT2_mviero_2	Public		http://archives.esac.esa.int/hsa/whsa-tap-server/data?observation_oid=8517634&username=mkidger&RETRIEVAL_TYPE=POSTCARD&DATA RETRIEVAL ORIGIN=IGNORE
1342249117	SpirePhotSmallScan	1180	Calibration_rpspire_126	Public	704 Interamnia	http://archives.esac.esa.int/hsa/whsa-tap-server/data?observation_oid=8517753&username=mkidger&RETRIEVAL_TYPE=POSTCARD&DATA RETRIEVAL ORIGIN=IGNORE
1342249224	SpirePhotSmallScan	1182	Calibration_rpspire_126	Public	3 Juno	http://archives.esac.esa.int/hsa/whsa-tap-server/data?observation_oid=8518023&username=mkidger&RETRIEVAL_TYPE=POSTCARD&DATA RETRIEVAL ORIGIN=IGNORE
1342249258	SpirePhotSmallScan	1183	Calibration_rpspire_128	Public	47 Aglaja	http://archives.esac.esa.int/hsa/whsa-tap-server/data?observation_oid=8517997&username=mkidger&RETRIEVAL_TYPE=POSTCARD&DATA RETRIEVAL ORIGIN=IGNORE
1342250236	SpirePhotSmallScan	1200	Calibration_rpspire_130	Public	704 Interamnia	http://archives.esac.esa.int/hsa/whsa-tap-server/data?observation_oid=8518035&username=mkidger&RETRIEVAL_TYPE=POSTCARD&DATA RETRIEVAL ORIGIN=IGNORE
1342250324	SpirePhotSmallScan	1201	Calibration_rpspire_130	Public	4 Vesta	http://archives.esac.esa.int/hsa/whsa-tap-server/data?observation_oid=8518080&username=mkidger&RETRIEVAL_TYPE=POSTCARD&DATA RETRIEVAL ORIGIN=IGNORE
1342255137	SpirePhotSmallScan	1282	Calibration_rpspire_144	Public	511 Davida	http://archives.esac.esa.int/hsa/whsa-tap-server/data?observation_oid=8518269&username=mkidger&RETRIEVAL_TYPE=POSTCARD&DATA RETRIEVAL ORIGIN=IGNORE
1342255167	SpirePhotSmallScan	1283	OT1_abcian_1	Public		http://archives.esac.esa.int/hsa/whsa-tap-server/data?observation_oid=8518196&username=mkidger&RETRIEVAL_TYPE=POSTCARD&DATA RETRIEVAL ORIGIN=IGNORE
1342255172	SpirePhotLargeScan	1282	DDT_mustdo_5	Public		http://archives.esac.esa.int/hsa/whsa-tap-server/data?observation_oid=8518509&username=mkidger&RETRIEVAL_TYPE=POSTCARD&DATA RETRIEVAL ORIGIN=IGNORE
1342255183	SpirePhotLargeScan	1282	OT2_dhunter_4	Public		http://archives.esac.esa.int/hsa/whsa-tap-server/data?observation_oid=8612729&username=mkidger&RETRIEVAL_TYPE=POSTCARD&DATA RETRIEVAL ORIGIN=IGNORE
1342256652	SpirePhotSmallScan	1304	OT2_jsmith01_2	Public		http://archives.esac.esa.int/hsa/whsa-tap-server/data?observation_oid=8518545&username=mkidger&RETRIEVAL_TYPE=POSTCARD&DATA RETRIEVAL ORIGIN=IGNORE
1342256843	SpirePhotLargeScan	1305	DDT_mustdo_5	Public		http://archives.esac.esa.int/hsa/whsa-tap-server/data?observation_oid=8518720&username=mkidger&RETRIEVAL_TYPE=POSTCARD&DATA RETRIEVAL ORIGIN=IGNORE

						YPE=POSTCARD&DATA RETRIEVAL ORIGIN=IGNORE
1342256847	SpirePhotLargeScan	1305	DDT_mustdo_5	Public		http://archives.esac.esa.int/hsa/whsa-tap-server/data?observation_oid=8613642&username=mkidger&RETRIEVAL_TYPE=POSTCARD&DATA RETRIEVAL ORIGIN=IGNORE
1342256854	SpirePhotSmallScan	1305	OT2_mhayes_2	Public		http://archives.esac.esa.int/hsa/whsa-tap-server/data?observation_oid=8613670&username=mkidger&RETRIEVAL_TYPE=POSTCARD&DATA RETRIEVAL ORIGIN=IGNORE
1342256857	SpirePhotLargeScan	1305	OT2_rhuub_2	Public		http://archives.esac.esa.int/hsa/whsa-tap-server/data?observation_oid=8613699&username=mkidger&RETRIEVAL_TYPE=POSTCARD&DATA RETRIEVAL ORIGIN=IGNORE
1342256858	SpirePhotLargeScan	1305	OT2_rhuub_2	Public		http://archives.esac.esa.int/hsa/whsa-tap-server/data?observation_oid=8613734&username=mkidger&RETRIEVAL_TYPE=POSTCARD&DATA RETRIEVAL ORIGIN=IGNORE
1342256859	SpirePhotLargeScan	1305	OT2_rhuub_2	Public		http://archives.esac.esa.int/hsa/whsa-tap-server/data?observation_oid=8613770&username=mkidger&RETRIEVAL_TYPE=POSTCARD&DATA RETRIEVAL ORIGIN=IGNORE
1342256860	SpirePhotLargeScan	1305	OT2_rhuub_2	Public		http://archives.esac.esa.int/hsa/whsa-tap-server/data?observation_oid=8613806&username=mkidger&RETRIEVAL_TYPE=POSTCARD&DATA RETRIEVAL ORIGIN=IGNORE
1342256861	SpirePhotLargeScan	1305	OT2_rhuub_2	Public		http://archives.esac.esa.int/hsa/whsa-tap-server/data?observation_oid=8613848&username=mkidger&RETRIEVAL_TYPE=POSTCARD&DATA RETRIEVAL ORIGIN=IGNORE
1342256863	SpirePhotSmallScan	1305	Calibration_rpspire_146	Public	29 Amphitrite	http://archives.esac.esa.int/hsa/whsa-tap-server/data?observation_oid=8613887&username=mkidger&RETRIEVAL_TYPE=POSTCARD&DATA RETRIEVAL ORIGIN=IGNORE
1342256867	SpirePhotSmallScan	1305	Calibration_rpspire_146	Public	54 Alexandra	http://archives.esac.esa.int/hsa/whsa-tap-server/data?observation_oid=8518758&username=mkidger&RETRIEVAL_TYPE=POSTCARD&DATA RETRIEVAL ORIGIN=IGNORE
1342256871	SpirePhotSmallScan	1305	Calibration_rpspire_146	Public	40 Harmonia	http://archives.esac.esa.int/hsa/whsa-tap-server/data?observation_oid=8543262&username=mkidger&RETRIEVAL_TYPE=POSTCARD&DATA RETRIEVAL ORIGIN=IGNORE
1342257361	SpirePhotSmallScan	1314	Calibration_rpspire_148	Public	2 Pallas	http://archives.esac.esa.int/hsa/whsa-tap-server/data?observation_oid=8543262&username=mkidger&RETRIEVAL_TYPE=POSTCARD&DATA RETRIEVAL ORIGIN=IGNORE
1342257362	SpirePhotLargeScan	1314	GT2_mviero_1	Public		http://archives.esac.esa.int/hsa/whsa-tap-server/data?observation_oid=8612632&username=mkidger&RETRIEVAL_TYPE=POSTCARD&DATA RETRIEVAL ORIGIN=IGNORE
1342257368	SpirePhotSmallScan	1314	Calibration_rpspire_148	Public	65 Cybele	http://archives.esac.esa.int/hsa/whsa-tap-server/data?observation_oid=8612678&username=mkidger&RETRIEVAL_T

						YPE=POSTCARD&DATA RETRIEVAL ORIGIN=IGNORE
1342257369	SpirePhotSmallScan	1314	Calibration_rpspire_148	Public	372 Palma	http://archives.esac.esa.int/hsa/whsa-tap-server/data?observation_oid=8612719&username=mkidger&RETRIEVAL_TYPE=POSTCARD&DATA RETRIEVAL ORIGIN=IGNORE
1342265388	SpirePhotSmallScan	1388	Calibration_rpspire_158	Public	8 Flora	http://archives.esac.esa.int/hsa/whsa-tap-server/data?observation_oid=8612757&username=mkidger&RETRIEVAL_TYPE=POSTCARD&DATA RETRIEVAL ORIGIN=IGNORE
1342266670	SpirePhotLargeScan	1387	Calibration_rpspire_158	Public	1 Ceres	http://archives.esac.esa.int/hsa/whsa-tap-server/data?observation_oid=8612795&username=mkidger&RETRIEVAL_TYPE=POSTCARD&DATA RETRIEVAL ORIGIN=IGNORE
1342267716	SpirePhotSmallScan	1402	Calibration_rpspire_160	Public	21 Lutetia	http://archives.esac.esa.int/hsa/whsa-tap-server/data?observation_oid=8612831&username=mkidger&RETRIEVAL_TYPE=POSTCARD&DATA RETRIEVAL ORIGIN=IGNORE
1342267718	SpirePhotSmallScan	1402	Calibration_rpspire_160	Public	704 Interamnia	http://archives.esac.esa.int/hsa/whsa-tap-server/data?observation_oid=8519044&username=mkidger&RETRIEVAL_TYPE=POSTCARD&DATA RETRIEVAL ORIGIN=IGNORE
1342267723	SpirePhotSmallScan	1402	Calibration_rpspire_160	Public	6 Hebe	http://archives.esac.esa.int/hsa/whsa-tap-server/data?observation_oid=8519048&username=mkidger&RETRIEVAL_TYPE=POSTCARD&DATA RETRIEVAL ORIGIN=IGNORE
1342267728	SpirePhotSmallScan	1402	Calibration_rpspire_160	Public	88 Thisbe	http://archives.esac.esa.int/hsa/whsa-tap-server/data?observation_oid=8618136&username=mkidger&RETRIEVAL_TYPE=POSTCARD&DATA RETRIEVAL ORIGIN=IGNORE
1342267730	SpirePhotSmallScan	1403	Calibration_rpspire_160	Public	47 Aglaja	http://archives.esac.esa.int/hsa/whsa-tap-server/data?observation_oid=8519051&username=mkidger&RETRIEVAL_TYPE=POSTCARD&DATA RETRIEVAL ORIGIN=IGNORE
1342267731	SpirePhotSmallScan	1403	Calibration_rpspire_160	Public	8 Flora	http://archives.esac.esa.int/hsa/whsa-tap-server/data?observation_oid=8519043&username=mkidger&RETRIEVAL_TYPE=POSTCARD&DATA RETRIEVAL ORIGIN=IGNORE
1342267735	SpirePhotSmallScan	1403	Calibration_rpspire_160	Public	173 Ino	http://archives.esac.esa.int/hsa/whsa-tap-server/data?observation_oid=8519126&username=mkidger&RETRIEVAL_TYPE=POSTCARD&DATA RETRIEVAL ORIGIN=IGNORE
1342267747	SpirePhotSmallScan	1403	Calibration_rpspire_160	Public	4 Vesta	http://archives.esac.esa.int/hsa/whsa-tap-server/data?observation_oid=8519233&username=mkidger&RETRIEVAL_TYPE=POSTCARD&DATA RETRIEVAL ORIGIN=IGNORE
1342267748	SpirePhotSmallScan	1403	Calibration_rpspire_160	Public	1 Ceres	http://archives.esac.esa.int/hsa/whsa-tap-server/data?observation_oid=8614149&username=mkidger&RETRIEVAL_TYPE=POSTCARD&DATA RETRIEVAL ORIGIN=IGNORE
1342267758	SpirePhotSmallScan	1403	Calibration_rpspire_160	Public	37 Fides	http://archives.esac.esa.int/hsa/whsa-tap-server/data?observation_oid=8614191&username=mkidger&RETRIEVAL_TYPE=POSTCARD&DATA RETRIEVAL ORIGIN=IGNORE

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1342268337	SpirePhotSmallScan	1411	Calibration_rpspire_162	Public	Aldebaran	http://archives.esac.esa.int/hsa/whsa-tap-server/data?observation_oid=8519296&username=mkidger&RETRIEVAL_TYPE=POSTCARD&DATA RETRIEVAL ORIGIN=IGNORE
1342268344	SpirePhotSmallScan	1411	Calibration_rpspire_162	Public	1 Ceres	http://archives.esac.esa.int/hsa/whsa-tap-server/data?observation_oid=8519390&username=mkidger&RETRIEVAL_TYPE=POSTCARD&DATA RETRIEVAL ORIGIN=IGNORE
1342268345	SpirePhotSmallScan	1411	Calibration_rpspire_162	Public	21 Lutetia	http://archives.esac.esa.int/hsa/whsa-tap-server/data?observation_oid=8519518&username=mkidger&RETRIEVAL_TYPE=POSTCARD&DATA RETRIEVAL ORIGIN=IGNORE
1342268372	SpirePhotSmallScan	1411	Calibration_rpspire_162	Public	3 Juno	http://archives.esac.esa.int/hsa/whsa-tap-server/data?observation_oid=8612988&username=mkidger&RETRIEVAL_TYPE=POSTCARD&DATA RETRIEVAL ORIGIN=IGNORE
1342268373	SpirePhotSmallScan	1411	Calibration_rpspire_162	Public	8 Flora	http://archives.esac.esa.int/hsa/whsa-tap-server/data?observation_oid=8519913&username=mkidger&RETRIEVAL_TYPE=POSTCARD&DATA RETRIEVAL ORIGIN=IGNORE
1342268374	SpirePhotSmallScan	1411	Calibration_rpspire_162	Public	173 Ino	http://archives.esac.esa.int/hsa/whsa-tap-server/data?observation_oid=8527926&username=mkidger&RETRIEVAL_TYPE=POSTCARD&DATA RETRIEVAL ORIGIN=IGNORE
1342268404	SpirePhotSmallScan	1411	Calibration_rpspire_162	Public	93 Minerva	http://archives.esac.esa.int/hsa/whsa-tap-server/data?observation_oid=8528879&username=mkidger&RETRIEVAL_TYPE=POSTCARD&DATA RETRIEVAL ORIGIN=IGNORE
1342270200	SpirePhotSmallScan	1434	Calibration_rpspire_164	Public	3 Juno	http://archives.esac.esa.int/hsa/whsa-tap-server/data?observation_oid=8528866&username=mkidger&RETRIEVAL_TYPE=POSTCARD&DATA RETRIEVAL ORIGIN=IGNORE
1342185791	SpirePhotLargeScan	153	Calibration_pvspire_42	Public	4 Vesta	http://archives.esac.esa.int/hsa/whsa-tap-server/data?observation_oid=8528486&username=mkidger&RETRIEVAL_TYPE=POSTCARD&DATA RETRIEVAL ORIGIN=IGNORE
1342185792	SpirePhotLargeScan	153	Calibration_pvspire_42	Public	4 Vesta	http://archives.esac.esa.int/hsa/whsa-tap-server/data?observation_oid=8528475&username=mkidger&RETRIEVAL_TYPE=POSTCARD&DATA RETRIEVAL ORIGIN=IGNORE
1342185793	SpirePhotLargeScan	153	Calibration_pvspire_42	Public	4 Vesta	http://archives.esac.esa.int/hsa/whsa-tap-server/data?observation_oid=8618228&username=mkidger&RETRIEVAL_TYPE=POSTCARD&DATA RETRIEVAL ORIGIN=IGNORE
1342185794	SpirePhotLargeScan	153	Calibration_pvspire_42	Public	4 Vesta	http://archives.esac.esa.int/hsa/whsa-tap-server/data?observation_oid=8528454&username=mkidger&RETRIEVAL_TYPE=POSTCARD&DATA RETRIEVAL ORIGIN=IGNORE
1342185908	SpirePhotLargeScan	153	Calibration_pvspire_42	Public	4 Vesta	http://archives.esac.esa.int/hsa/whsa-tap-server/data?observation_oid=8528836&username=mkidger&RETRIEVAL_TYPE=POSTCARD&DATA RETRIEVAL ORIGIN=IGNORE

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1342185909	SpirePhotLargeScan	153	Calibration_pvspire_42	Public	4 Vesta	http://archives.esac.esa.int/hsa/whsa-tap-server/data?observation_oid=8528772&username=mkidger&RETRIEVAL_TYPE=POSTCARD&DATA RETRIEVAL ORIGIN=IGNORE
1342185938	SpirePhotLargeScan	153	Calibration_pvspire_42	Public	4 Vesta	http://archives.esac.esa.int/hsa/whsa-tap-server/data?observation_oid=8528745&username=mkidger&RETRIEVAL_TYPE=POSTCARD&DATA RETRIEVAL ORIGIN=IGNORE
1342186116	SpirePhotLargeScan	158	SDP_smadde01_3	Public	II Zw 40	http://archives.esac.esa.int/hsa/whsa-tap-server/data?observation_oid=8616519&username=mkidger&RETRIEVAL_TYPE=POSTCARD&DATA RETRIEVAL ORIGIN=IGNORE
1342186293	SpirePhotLargeScan	164	SDP_mgroen01_3	Public	CW Leo	http://archives.esac.esa.int/hsa/whsa-tap-server/data?observation_oid=8528804&username=mkidger&RETRIEVAL_TYPE=POSTCARD&DATA RETRIEVAL ORIGIN=IGNORE
1342186490	SpirePhotLargeScan	167	Calibration_pvspire_45	Public	4 Vesta	http://archives.esac.esa.int/hsa/whsa-tap-server/data?observation_oid=8528891&username=mkidger&RETRIEVAL_TYPE=POSTCARD&DATA RETRIEVAL ORIGIN=IGNORE
1342186507	SpirePhotLargeScan	168	Calibration_pvspire_46	Public	4 Vesta	http://archives.esac.esa.int/hsa/whsa-tap-server/data?observation_oid=8528876&username=mkidger&RETRIEVAL_TYPE=POSTCARD&DATA RETRIEVAL ORIGIN=IGNORE
1342186522	SpirePhotLargeScan	168	Calibration_pvspire_46	Public	Neptune	http://archives.esac.esa.int/hsa/whsa-tap-server/data?observation_oid=8528686&username=mkidger&RETRIEVAL_TYPE=POSTCARD&DATA RETRIEVAL ORIGIN=IGNORE
1342186523	SpirePhotLargeScan	168	Calibration_pvspire_46	Public	Neptune	http://archives.esac.esa.int/hsa/whsa-tap-server/data?observation_oid=8618226&username=mkidger&RETRIEVAL_TYPE=POSTCARD&DATA RETRIEVAL ORIGIN=IGNORE
1342186524	SpirePhotLargeScan	168	Calibration_pvspire_46	Public	Neptune	http://archives.esac.esa.int/hsa/whsa-tap-server/data?observation_oid=8618219&username=mkidger&RETRIEVAL_TYPE=POSTCARD&DATA RETRIEVAL ORIGIN=IGNORE
1342186525	SpirePhotLargeScan	168	Calibration_pvspire_46	Public	Neptune	http://archives.esac.esa.int/hsa/whsa-tap-server/data?observation_oid=8534706&username=mkidger&RETRIEVAL_TYPE=POSTCARD&DATA RETRIEVAL ORIGIN=IGNORE
1342186526	SpirePhotLargeScan	168	Calibration_pvspire_46	Public	Mars	http://archives.esac.esa.int/hsa/whsa-tap-server/data?observation_oid=8534704&username=mkidger&RETRIEVAL_TYPE=POSTCARD&DATA RETRIEVAL ORIGIN=IGNORE
1342187173	SpirePhotLargeScan	192	SDP_seales01_3	Public	M99	http://archives.esac.esa.int/hsa/whsa-tap-server/data?observation_oid=8618225&username=mkidger&RETRIEVAL_TYPE=POSTCARD&DATA RETRIEVAL ORIGIN=IGNORE
1342187186	SpirePhotLargeScan	193	SDP_rkennicu_3	Public	NGC4559	http://archives.esac.esa.int/hsa/whsa-tap-server/data?observation_oid=8534758&username=mkidger&RETRIEVAL_TYPE=POSTCARD&DATA RETRIEVAL ORIGIN=IGNORE

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1342187261	SpirePhotLargeScan	199	SDP_thmuelle_3	Public	90482 Orcus	http://archives.esac.esa.int/hsa/whsa-tap-server/data?observation_oid=8534862&username=mkidger&RETRIEVAL_TYPE=POSTCARD&DATA RETRIEVAL ORIGIN=IGNORE
1342187262	SpirePhotLargeScan	199	SDP_thmuelle_3	Public	90482 Orcus	http://archives.esac.esa.int/hsa/whsa-tap-server/data?observation_oid=8534607&username=mkidger&RETRIEVAL_TYPE=POSTCARD&DATA RETRIEVAL ORIGIN=IGNORE
1342187319	SpirePhotLargeScan	200	SDP_thmuelle_3	Public	136472 Makemake	http://archives.esac.esa.int/hsa/whsa-tap-server/data?observation_oid=8528305&username=mkidger&RETRIEVAL_TYPE=POSTCARD&DATA RETRIEVAL ORIGIN=IGNORE
1342187320	SpirePhotLargeScan	200	SDP_thmuelle_3	Public	136472 Makemake	http://archives.esac.esa.int/hsa/whsa-tap-server/data?observation_oid=8528281&username=mkidger&RETRIEVAL_TYPE=POSTCARD&DATA RETRIEVAL ORIGIN=IGNORE
1342187448	SpirePhotLargeScan	202	Calibration_pvspire_57	Public	Uranus	http://archives.esac.esa.int/hsa/whsa-tap-server/data?observation_oid=8614741&username=mkidger&RETRIEVAL_TYPE=POSTCARD&DATA RETRIEVAL ORIGIN=IGNORE
1342187449	SpirePhotLargeScan	202	Calibration_pvspire_57	Public	Uranus	http://archives.esac.esa.int/hsa/whsa-tap-server/data?observation_oid=8617910&username=mkidger&RETRIEVAL_TYPE=POSTCARD&DATA RETRIEVAL ORIGIN=IGNORE
1342187509	SpirePhotLargeScan	201	Calibration_pvspire_56	Public	65 Cybelle	http://archives.esac.esa.int/hsa/whsa-tap-server/data?observation_oid=8614746&username=mkidger&RETRIEVAL_TYPE=POSTCARD&DATA RETRIEVAL ORIGIN=IGNORE
1342187511	SpirePhotLargeScan	201	Calibration_pvspire_56	Public	65 Cybelle	http://archives.esac.esa.int/hsa/whsa-tap-server/data?observation_oid=8618222&username=mkidger&RETRIEVAL_TYPE=POSTCARD&DATA RETRIEVAL ORIGIN=IGNORE
1342187514	SpirePhotLargeScan	201	Calibration_pvspire_56	Public	3 Juno	http://archives.esac.esa.int/hsa/whsa-tap-server/data?observation_oid=8528388&username=mkidger&RETRIEVAL_TYPE=POSTCARD&DATA RETRIEVAL ORIGIN=IGNORE
1342187516	SpirePhotLargeScan	201	Calibration_pvspire_56	Public	3 Juno	http://archives.esac.esa.int/hsa/whsa-tap-server/data?observation_oid=8528427&username=mkidger&RETRIEVAL_TYPE=POSTCARD&DATA RETRIEVAL ORIGIN=IGNORE
1342187522	SpirePhotLargeScan	201	SDP_thmuelle_3	Public	90482 Orcus	http://archives.esac.esa.int/hsa/whsa-tap-server/data?observation_oid=8528448&username=mkidger&RETRIEVAL_TYPE=POSTCARD&DATA RETRIEVAL ORIGIN=IGNORE
1342187523	SpirePhotLargeScan	201	SDP_thmuelle_3	Public	90482 Orcus	http://archives.esac.esa.int/hsa/whsa-tap-server/data?observation_oid=8528431&username=mkidger&RETRIEVAL_TYPE=POSTCARD&DATA RETRIEVAL ORIGIN=IGNORE
1342192097	SpirePhotLargeScan	301	Calibration_rpspire_10	Public	52 Europa	http://archives.esac.esa.int/hsa/whsa-tap-server/data?observation_oid=8529006&username=mkidger&RETRIEVAL_TYPE=POSTCARD&DATA RETRIEVAL ORIGIN=IGNORE

						YPE=POSTCARD&DATA RETRIEVAL ORIGIN=IGNORE
1342192098	SpirePhotSmallScan	301	Calibration_rpspire_10	Public	Aldebaran	http://archives.esac.esa.int/hsa/whsa-tap-server/data?observation_oid=8529068&username=mkidger&RETRIEVAL_TYPE=POSTCARD&DATA RETRIEVAL ORIGIN=IGNORE
1342192099	SpirePhotSmallScan	301	KPGT_mgroen01_1	Public	Betelgeuse	http://archives.esac.esa.int/hsa/whsa-tap-server/data?observation_oid=8529100&username=mkidger&RETRIEVAL_TYPE=POSTCARD&DATA RETRIEVAL ORIGIN=IGNORE
1342193010	SpirePhotLargeScan	318	Calibration_rpspire_10	Public	52 Europa	http://archives.esac.esa.int/hsa/whsa-tap-server/data?observation_oid=8529137&username=mkidger&RETRIEVAL_TYPE=POSTCARD&DATA RETRIEVAL ORIGIN=IGNORE
1342193788	SpirePhotSmallScan	326	Calibration_rpspire_14	Public	1 Ceres	http://archives.esac.esa.int/hsa/whsa-tap-server/data?observation_oid=852978&username=mkidger&RETRIEVAL_TYPE=POSTCARD&DATA RETRIEVAL ORIGIN=IGNORE
1342193790	SpirePhotLargeScan	326	Calibration_rpspire_14	Public	1 Ceres	http://archives.esac.esa.int/hsa/whsa-tap-server/data?observation_oid=8529749&username=mkidger&RETRIEVAL_TYPE=POSTCARD&DATA RETRIEVAL ORIGIN=IGNORE
1342195282	SpirePhotLargeScan	341	Calibration_rpspire_15	Public	10 Hygiea	http://archives.esac.esa.int/hsa/whsa-tap-server/data?observation_oid=8529779&username=mkidger&RETRIEVAL_TYPE=POSTCARD&DATA RETRIEVAL ORIGIN=IGNORE
1342195283	SpirePhotSmallScan	341	Calibration_rpspire_15	Public	10 Hygiea	http://archives.esac.esa.int/hsa/whsa-tap-server/data?observation_oid=8529924&username=mkidger&RETRIEVAL_TYPE=POSTCARD&DATA RETRIEVAL ORIGIN=IGNORE
1342195286	SpirePhotSmallScan	341	Calibration_pvspire_65	Public	10 Hygiea	http://archives.esac.esa.int/hsa/whsa-tap-server/data?observation_oid=8529651&username=mkidger&RETRIEVAL_TYPE=POSTCARD&DATA RETRIEVAL ORIGIN=IGNORE
1342195305	SpirePhotSmallScan	342	Calibration_pvspire_65	Public		http://archives.esac.esa.int/hsa/whsa-tap-server/data?observation_oid=8530077&username=mkidger&RETRIEVAL_TYPE=POSTCARD&DATA RETRIEVAL ORIGIN=IGNORE
1342195665	SpirePhotSmallScan	349	KPOT_thmuelle_1	Public	2060 Chiron	http://archives.esac.esa.int/hsa/whsa-tap-server/data?observation_oid=8529144&username=mkidger&RETRIEVAL_TYPE=POSTCARD&DATA RETRIEVAL ORIGIN=IGNORE
1342195675	SpirePhotSmallScan	349	KPOT_thmuelle_1	Public	2060 Chiron	http://archives.esac.esa.int/hsa/whsa-tap-server/data?observation_oid=8529336&username=mkidger&RETRIEVAL_TYPE=POSTCARD&DATA RETRIEVAL ORIGIN=IGNORE
1342195750	SpirePhotLargeScan	354	Calibration_rpspire_15	Public	4 Vesta	http://archives.esac.esa.int/hsa/whsa-tap-server/data?observation_oid=8529414&username=mkidger&RETRIEVAL_TYPE=POSTCARD&DATA RETRIEVAL ORIGIN=IGNORE
1342195751	SpirePhotSmallScan	354	KPGT_seales01_1	Public		http://archives.esac.esa.int/hsa/whsa-tap-server/data?observation_oid=8529495&username=mkidger&RETRIEVAL_TYPE=POSTCARD&DATA RETRIEVAL ORIGIN=IGNORE

						YPE=POSTCARD&DATA RETRIEVAL ORIGIN=IGNORE
1342195856	SpirePhotLargeScan	358	KPGT_soliver_1	Public		http://archives.esac.esa.int/hsa/whsa-tap-server/data?observation_oid=8529431&username=mkidger&RETRIEVAL_TYPE=POSTCARD&DATA RETRIEVAL ORIGIN=IGNORE
1342195857	SpirePhotLargeScan	358	KPGT_soliver_1	Public		http://archives.esac.esa.int/hsa/whsa-tap-server/data?observation_oid=8529665&username=mkidger&RETRIEVAL_TYPE=POSTCARD&DATA RETRIEVAL ORIGIN=IGNORE
1342195858	SpirePhotLargeScan	358	KPGT_soliver_1	Public		http://archives.esac.esa.int/hsa/whsa-tap-server/data?observation_oid=8529783&username=mkidger&RETRIEVAL_TYPE=POSTCARD&DATA RETRIEVAL ORIGIN=IGNORE
1342195859	SpirePhotLargeScan	358	KPGT_soliver_1	Public		http://archives.esac.esa.int/hsa/whsa-tap-server/data?observation_oid=8530115&username=mkidger&RETRIEVAL_TYPE=POSTCARD&DATA RETRIEVAL ORIGIN=IGNORE
1342195860	SpirePhotLargeScan	358	KPGT_soliver_1	Public		http://archives.esac.esa.int/hsa/whsa-tap-server/data?observation_oid=8530123&username=mkidger&RETRIEVAL_TYPE=POSTCARD&DATA RETRIEVAL ORIGIN=IGNORE
1342195861	SpirePhotLargeScan	358	KPGT_soliver_1	Public		http://archives.esac.esa.int/hsa/whsa-tap-server/data?observation_oid=8530068&username=mkidger&RETRIEVAL_TYPE=POSTCARD&DATA RETRIEVAL ORIGIN=IGNORE
1342195862	SpirePhotLargeScan	358	KPGT_soliver_1	Public		http://archives.esac.esa.int/hsa/whsa-tap-server/data?observation_oid=8530259&username=mkidger&RETRIEVAL_TYPE=POSTCARD&DATA RETRIEVAL ORIGIN=IGNORE
1342195863	SpirePhotLargeScan	358	KPGT_soliver_1	Public		http://archives.esac.esa.int/hsa/whsa-tap-server/data?observation_oid=8530243&username=mkidger&RETRIEVAL_TYPE=POSTCARD&DATA RETRIEVAL ORIGIN=IGNORE
1342195864	SpirePhotSmallScan	358	Calibration_rpspire_15	Public	10 Hygiea	http://archives.esac.esa.int/hsa/whsa-tap-server/data?observation_oid=8530231&username=mkidger&RETRIEVAL_TYPE=POSTCARD&DATA RETRIEVAL ORIGIN=IGNORE
1342195933	SpirePhotSmallScan	359	Calibration_rpspire_16	Public	6 Hebe	http://archives.esac.esa.int/hsa/whsa-tap-server/data?observation_oid=8530209&username=mkidger&RETRIEVAL_TYPE=POSTCARD&DATA RETRIEVAL ORIGIN=IGNORE
1342195934	SpirePhotLargeScan	359	Calibration_rpspire_16	Public	6 Hebe	http://archives.esac.esa.int/hsa/whsa-tap-server/data?observation_oid=8530425&username=mkidger&RETRIEVAL_TYPE=POSTCARD&DATA RETRIEVAL ORIGIN=IGNORE
1342195938	SpirePhotLargeScan	359	KPOT_eegami_1	Public		http://archives.esac.esa.int/hsa/whsa-tap-server/data?observation_oid=8614115&username=mkidger&RETRIEVAL_TYPE=POSTCARD&DATA RETRIEVAL ORIGIN=IGNORE
1342195945	SpirePhotSmallScan	359	KPGT_seales01_1	Public		http://archives.esac.esa.int/hsa/whsa-tap-server/data?observation_oid=8614040&username=mkidger&RETRIEVAL_T

						YPE=POSTCARD&DATA RETRIEVAL ORIGIN=IGNORE
1342196660	SpirePhotLargeScan	369	KPGT_dlut_1	Public		http://archives.esac.esa.int/hsa/whsa-tap-server/data?observation_oid=8530878&username=mkidger&RETRIEVAL_TYPE=POSTCARD&DATA RETRIEVAL ORIGIN=IGNORE
1342196661	SpirePhotLargeScan	369	KPGT_dlut_1	Public		http://archives.esac.esa.int/hsa/whsa-tap-server/data?observation_oid=8530937&username=mkidger&RETRIEVAL_TYPE=POSTCARD&DATA RETRIEVAL ORIGIN=IGNORE
1342196662	SpirePhotLargeScan	369	KPGT_dlut_1	Public		http://archives.esac.esa.int/hsa/whsa-tap-server/data?observation_oid=8530901&username=mkidger&RETRIEVAL_TYPE=POSTCARD&DATA RETRIEVAL ORIGIN=IGNORE
1342200202	SpirePhotLargeScan	423	Calibration_rpspire_20	Public	2 Pallas	http://archives.esac.esa.int/hsa/whsa-tap-server/data?observation_oid=8531036&username=mkidger&RETRIEVAL_TYPE=POSTCARD&DATA RETRIEVAL ORIGIN=IGNORE
1342200228	SpirePhotSmallScan	423	KPGT_seales01_1	Public		http://archives.esac.esa.int/hsa/whsa-tap-server/data?observation_oid=8614749&username=mkidger&RETRIEVAL_TYPE=POSTCARD&DATA RETRIEVAL ORIGIN=IGNORE
1342201135	SpirePhotSmallScan	434	KPOT_thmuelle_1	Public	38628 Huya	http://archives.esac.esa.int/hsa/whsa-tap-server/data?observation_oid=8531338&username=mkidger&RETRIEVAL_TYPE=POSTCARD&DATA RETRIEVAL ORIGIN=IGNORE
1342201145	SpirePhotLargeScan	435	KPOT_gsmith01_1	Public	Abell 267	http://archives.esac.esa.int/hsa/whsa-tap-server/data?observation_oid=8531279&username=mkidger&RETRIEVAL_TYPE=POSTCARD&DATA RETRIEVAL ORIGIN=IGNORE
1342201146	SpirePhotSmallScan	435	KPOT_thmuelle_1	Public	55637 (2002 UX25)	http://archives.esac.esa.int/hsa/whsa-tap-server/data?observation_oid=8531324&username=mkidger&RETRIEVAL_TYPE=POSTCARD&DATA RETRIEVAL ORIGIN=IGNORE
1342201255	SpirePhotSmallScan	439	KPOT_thmuelle_1	Public	38628 Huya	http://archives.esac.esa.int/hsa/whsa-tap-server/data?observation_oid=8614751&username=mkidger&RETRIEVAL_TYPE=POSTCARD&DATA RETRIEVAL ORIGIN=IGNORE
1342201256	SpirePhotSmallScan	439	KPGT_soliver_1	Public		http://archives.esac.esa.int/hsa/whsa-tap-server/data?observation_oid=8614754&username=mkidger&RETRIEVAL_TYPE=POSTCARD&DATA RETRIEVAL ORIGIN=IGNORE
1342201257	SpirePhotSmallScan	439	KPGT_soliver_1	Public		http://archives.esac.esa.int/hsa/whsa-tap-server/data?observation_oid=8613112&username=mkidger&RETRIEVAL_TYPE=POSTCARD&DATA RETRIEVAL ORIGIN=IGNORE
1342201258	SpirePhotSmallScan	439	KPGT_soliver_1	Public		http://archives.esac.esa.int/hsa/whsa-tap-server/data?observation_oid=8531629&username=mkidger&RETRIEVAL_TYPE=POSTCARD&DATA RETRIEVAL ORIGIN=IGNORE
1342201259	SpirePhotSmallScan	439	KPGT_soliver_1	Public		http://archives.esac.esa.int/hsa/whsa-tap-server/data?observation_oid=8531621&username=mkidger&RETRIEVAL_TYPE=POSTCARD&DATA RETRIEVAL ORIGIN=IGNORE

						YPE=POSTCARD&DATA RETRIEVAL ORIGIN=IGNORE
1342201260	SpirePhotSmallScan	439	KPGT_soliver_1	Public		http://archives.esac.esa.int/hsa/whsa-tap-server/data?observation_oid=8531617&username=mkidger&RETRIEVAL_TYPE=POSTCARD&DATA RETRIEVAL ORIGIN=IGNORE
1342201261	SpirePhotSmallScan	439	KPGT_soliver_1	Public		http://archives.esac.esa.int/hsa/whsa-tap-server/data?observation_oid=8531606&username=mkidger&RETRIEVAL_TYPE=POSTCARD&DATA RETRIEVAL ORIGIN=IGNORE
1342201262	SpirePhotSmallScan	439	KPGT_soliver_1	Public		http://archives.esac.esa.int/hsa/whsa-tap-server/data?observation_oid=8531622&username=mkidger&RETRIEVAL_TYPE=POSTCARD&DATA RETRIEVAL ORIGIN=IGNORE
1342201263	SpirePhotSmallScan	439	KPGT_soliver_1	Public		http://archives.esac.esa.int/hsa/whsa-tap-server/data?observation_oid=8531654&username=mkidger&RETRIEVAL_TYPE=POSTCARD&DATA RETRIEVAL ORIGIN=IGNORE
1342201324	SpirePhotSmallScan	439	KPOT_thmuelle_1	Public	55637 (2002 UX25)	http://archives.esac.esa.int/hsa/whsa-tap-server/data?observation_oid=8613929&username=mkidger&RETRIEVAL_TYPE=POSTCARD&DATA RETRIEVAL ORIGIN=IGNORE
1342201379	SpirePhotLargeScan	424	KPOT_gsmith01_1	Public	Abell 68	http://archives.esac.esa.int/hsa/whsa-tap-server/data?observation_oid=8613971&username=mkidger&RETRIEVAL_TYPE=POSTCARD&DATA RETRIEVAL ORIGIN=IGNORE
1342201438	SpirePhotLargeScan	427	KPGT_soliver_1	Public		http://archives.esac.esa.int/hsa/whsa-tap-server/data?observation_oid=8614014&username=mkidger&RETRIEVAL_TYPE=POSTCARD&DATA RETRIEVAL ORIGIN=IGNORE
1342201439	SpirePhotLargeScan	427	KPGT_soliver_1	Public		http://archives.esac.esa.int/hsa/whsa-tap-server/data?observation_oid=8531950&username=mkidger&RETRIEVAL_TYPE=POSTCARD&DATA RETRIEVAL ORIGIN=IGNORE
1342201440	SpirePhotLargeScan	427	KPGT_soliver_1	Public		http://archives.esac.esa.int/hsa/whsa-tap-server/data?observation_oid=8532005&username=mkidger&RETRIEVAL_TYPE=POSTCARD&DATA RETRIEVAL ORIGIN=IGNORE
1342201441	SpirePhotLargeScan	427	KPGT_soliver_1	Public		http://archives.esac.esa.int/hsa/whsa-tap-server/data?observation_oid=8531985&username=mkidger&RETRIEVAL_TYPE=POSTCARD&DATA RETRIEVAL ORIGIN=IGNORE
1342201442	SpirePhotLargeScan	427	KPGT_soliver_1	Public		http://archives.esac.esa.int/hsa/whsa-tap-server/data?observation_oid=8532016&username=mkidger&RETRIEVAL_TYPE=POSTCARD&DATA RETRIEVAL ORIGIN=IGNORE
1342201443	SpirePhotLargeScan	427	KPGT_soliver_1	Public		http://archives.esac.esa.int/hsa/whsa-tap-server/data?observation_oid=8613124&username=mkidger&RETRIEVAL_TYPE=POSTCARD&DATA RETRIEVAL ORIGIN=IGNORE
1342201444	SpirePhotLargeScan	427	KPGT_soliver_1	Public		http://archives.esac.esa.int/hsa/whsa-tap-server/data?observation_oid=8613133&username=mkidger&RETRIEVAL_TYPE=POSTCARD&DATA RETRIEVAL ORIGIN=IGNORE

						YPE=POSTCARD&DATA RETRIEVAL ORIGIN=IGNORE
1342202207	SpirePhotLargeScan	447	Calibration_rpspire_22	Public	2 Pallas	http://archives.esac.esa.int/hsa/whsa-tap-server/data?observation_oid=8613144&username=mkidger&RETRIEVAL_TYPE=POSTCARD&DATA RETRIEVAL ORIGIN=IGNORE
1342202208	SpirePhotLargeScan	447	Calibration_rpspire_22	Public	704 Interamnia	http://archives.esac.esa.int/hsa/whsa-tap-server/data?observation_oid=8613155&username=mkidger&RETRIEVAL_TYPE=POSTCARD&DATA RETRIEVAL ORIGIN=IGNORE
1342202212	SpirePhotSmallScan	448	KPOT_thmuelle_1	Public	10199 Chariklo	http://archives.esac.esa.int/hsa/whsa-tap-server/data?observation_oid=8613167&username=mkidger&RETRIEVAL_TYPE=POSTCARD&DATA RETRIEVAL ORIGIN=IGNORE
1342202219	SpirePhotSmallScan	448	KPOT_thmuelle_1	Public	10199 Chariklo	http://archives.esac.esa.int/hsa/whsa-tap-server/data?observation_oid=8613177&username=mkidger&RETRIEVAL_TYPE=POSTCARD&DATA RETRIEVAL ORIGIN=IGNORE
1342203076	SpirePhotLargeScan	458	Calibration_rpspire_24	Public	2 Pallas	http://archives.esac.esa.int/hsa/whsa-tap-server/data?observation_oid=8613197&username=mkidger&RETRIEVAL_TYPE=POSTCARD&DATA RETRIEVAL ORIGIN=IGNORE
1342203092	SpirePhotSmallScan	459	KPOT_thmuelle_1	Public	84522 (2002 TC302)	http://archives.esac.esa.int/hsa/whsa-tap-server/data?observation_oid=8613207&username=mkidger&RETRIEVAL_TYPE=POSTCARD&DATA RETRIEVAL ORIGIN=IGNORE
1342203285	SpirePhotSmallScan	459	KPOT_thmuelle_1	Public	84522 (2002 TC302)	http://archives.esac.esa.int/hsa/whsa-tap-server/data?observation_oid=8614209&username=mkidger&RETRIEVAL_TYPE=POSTCARD&DATA RETRIEVAL ORIGIN=IGNORE
1342236129	SpirePhotSmallScan	963	KPOT_thmuelle_1	Public	120347 Salacia	http://archives.esac.esa.int/hsa/whsa-tap-server/data?observation_oid=8613216&username=mkidger&RETRIEVAL_TYPE=POSTCARD&DATA RETRIEVAL ORIGIN=IGNORE
1342236130	SpirePhotSmallScan	963	Calibration_rpspire_92	Public	372 Palma	http://archives.esac.esa.int/hsa/whsa-tap-server/data?observation_oid=8613224&username=mkidger&RETRIEVAL_TYPE=POSTCARD&DATA RETRIEVAL ORIGIN=IGNORE
1342236232	SpirePhotLargeScan	963	GT2_mviero_1	Public		http://archives.esac.esa.int/hsa/whsa-tap-server/data?observation_oid=8618212&username=mkidger&RETRIEVAL_TYPE=POSTCARD&DATA RETRIEVAL ORIGIN=IGNORE
1342236234	SpirePhotLargeScan	963	GT2_mviero_1	Public		http://archives.esac.esa.int/hsa/whsa-tap-server/data?observation_oid=8618213&username=mkidger&RETRIEVAL_TYPE=POSTCARD&DATA RETRIEVAL ORIGIN=IGNORE
1342236235	SpirePhotSmallScan	963	Calibration_rpspire_92	Public	1 Ceres	http://archives.esac.esa.int/hsa/whsa-tap-server/data?observation_oid=8618214&username=mkidger&RETRIEVAL_TYPE=POSTCARD&DATA RETRIEVAL ORIGIN=IGNORE
1342236236	SpirePhotSmallScan	963	Calibration_rpspire_92	Public	1 Ceres	http://archives.esac.esa.int/hsa/whsa-tap-server/data?observation_oid=8613254&username=mkidger&RETRIEVAL_TYPE=POSTCARD&DATA RETRIEVAL ORIGIN=IGNORE

						YPE=POSTCARD&DATA RETRIEVAL ORIGIN=IGNORE
1342236240	SpirePhotLargeScan	964	GT2_mviero_1	Public		http://archives.esac.esa.int/hsa/whsa-tap-server/data?observation_oid=8613260&username=mkidger&RETRIEVAL_TYPE=POSTCARD&DATA RETRIEVAL ORIGIN=IGNORE
1342236252	SpirePhotSmallScan	964	Calibration_rpspire_92	Public	173 Ino	http://archives.esac.esa.int/hsa/whsa-tap-server/data?observation_oid=8613267&username=mkidger&RETRIEVAL_TYPE=POSTCARD&DATA RETRIEVAL ORIGIN=IGNORE
1342236257	SpirePhotSmallScan	964	KPOT_thmuelle_1	Public	120347 Salacia	http://archives.esac.esa.int/hsa/whsa-tap-server/data?observation_oid=8613273&username=mkidger&RETRIEVAL_TYPE=POSTCARD&DATA RETRIEVAL ORIGIN=IGNORE
1342237500	SpirePhotSmallScan	976	Calibration_rpspire_94	Public	29 Amphitrite	http://archives.esac.esa.int/hsa/whsa-tap-server/data?observation_oid=8618215&username=mkidger&RETRIEVAL_TYPE=POSTCARD&DATA RETRIEVAL ORIGIN=IGNORE
1342237516	SpirePhotSmallScan	976	Calibration_rpspire_94	Public	7 Iris	http://archives.esac.esa.int/hsa/whsa-tap-server/data?observation_oid=8532116&username=mkidger&RETRIEVAL_TYPE=POSTCARD&DATA RETRIEVAL ORIGIN=IGNORE
1342237518	SpirePhotSmallScan	976	OT1_rmushotz_1	Public		http://archives.esac.esa.int/hsa/whsa-tap-server/data?observation_oid=8614250&username=mkidger&RETRIEVAL_TYPE=POSTCARD&DATA RETRIEVAL ORIGIN=IGNORE
1342237550	SpirePhotLargeScan	976	GT2_mviero_1	Public		http://archives.esac.esa.int/hsa/whsa-tap-server/data?observation_oid=8532347&username=mkidger&RETRIEVAL_TYPE=POSTCARD&DATA RETRIEVAL ORIGIN=IGNORE
1342237553	SpirePhotLargeScan	976	GT2_mviero_1	Public		http://archives.esac.esa.int/hsa/whsa-tap-server/data?observation_oid=8613289&username=mkidger&RETRIEVAL_TYPE=POSTCARD&DATA RETRIEVAL ORIGIN=IGNORE
1342237563	SpirePhotLargeScan	977	GT2_mviero_1	Public		http://archives.esac.esa.int/hsa/whsa-tap-server/data?observation_oid=8618216&username=mkidger&RETRIEVAL_TYPE=POSTCARD&DATA RETRIEVAL ORIGIN=IGNORE
1342238251	SpirePhotLargeScan	989	GT2_mviero_1	Public		http://archives.esac.esa.int/hsa/whsa-tap-server/data?observation_oid=8532341&username=mkidger&RETRIEVAL_TYPE=POSTCARD&DATA RETRIEVAL ORIGIN=IGNORE
1342238269	SpirePhotSmallScan	989	OT1_jdrake01_1	Public	29 Ari	http://archives.esac.esa.int/hsa/whsa-tap-server/data?observation_oid=8532364&username=mkidger&RETRIEVAL_TYPE=POSTCARD&DATA RETRIEVAL ORIGIN=IGNORE
1342238302	SpirePhotSmallScan	989	Calibration_rpspire_96	Public	37 Fides	http://archives.esac.esa.int/hsa/whsa-tap-server/data?observation_oid=8532385&username=mkidger&RETRIEVAL_TYPE=POSTCARD&DATA RETRIEVAL ORIGIN=IGNORE
1342238303	SpirePhotSmallScan	989	Calibration_rpspire_96	Public	173 Ino	http://archives.esac.esa.int/hsa/whsa-tap-server/data?observation_oid=8532755&username=mkidger&RETRIEVAL_TYPE=POSTCARD&DATA RETRIEVAL ORIGIN=IGNORE

						YPE=POSTCARD&DATA RETRIEVAL ORIGIN=IGNORE
1342238306	SpirePhotSmallScan	989	Calibration_rpspire_96	Public	3 Juno	http://archives.esac.esa.int/hsa/whsa-tap-server/data?observation_oid=8532756&username=mkidger&RETRIEVAL_TYPE=POSTCARD&DATA RETRIEVAL ORIGIN=IGNORE
1342239053	SpirePhotSmallScan	1005	Calibration_rpspire_98	Public	40 Harmonia	http://archives.esac.esa.int/hsa/whsa-tap-server/data?observation_oid=8532752&username=mkidger&RETRIEVAL_TYPE=POSTCARD&DATA RETRIEVAL ORIGIN=IGNORE
1342239271	SpirePhotSmallScan	1006	Calibration_rpspire_98	Public	52 Europa	http://archives.esac.esa.int/hsa/whsa-tap-server/data?observation_oid=8532762&username=mkidger&RETRIEVAL_TYPE=POSTCARD&DATA RETRIEVAL ORIGIN=IGNORE
1342239272	SpirePhotSmallScan	1006	Calibration_rpspire_98	Public	52 Europa	http://archives.esac.esa.int/hsa/whsa-tap-server/data?observation_oid=8532647&username=mkidger&RETRIEVAL_TYPE=POSTCARD&DATA RETRIEVAL ORIGIN=IGNORE
1342239273	SpirePhotSmallScan	1006	Calibration_rpspire_98	Public	7 Iris	http://archives.esac.esa.int/hsa/whsa-tap-server/data?observation_oid=8532618&username=mkidger&RETRIEVAL_TYPE=POSTCARD&DATA RETRIEVAL ORIGIN=IGNORE
1342239786	SpirePhotSmallScan	1022	OT2_elellouc_2	Public	Pluto	http://archives.esac.esa.int/hsa/whsa-tap-server/data?observation_oid=8532641&username=mkidger&RETRIEVAL_TYPE=POSTCARD&DATA RETRIEVAL ORIGIN=IGNORE
1342239812	SpirePhotSmallScan	1022	Calibration_rpspire_100	Public	54 Alexandra	http://archives.esac.esa.int/hsa/whsa-tap-server/data?observation_oid=8533070&username=mkidger&RETRIEVAL_TYPE=POSTCARD&DATA RETRIEVAL ORIGIN=IGNORE
1342239812	SpirePhotSmallScan	1022	Calibration_rpspire_100	Public	54 Alexandra	http://archives.esac.esa.int/hsa/whsa-tap-server/data?observation_oid=8533077&username=mkidger&RETRIEVAL_TYPE=POSTCARD&DATA RETRIEVAL ORIGIN=IGNORE
1342239900	SpirePhotSmallScan	1022	OT2_elellouc_2	Public	Pluto	http://archives.esac.esa.int/hsa/whsa-tap-server/data?observation_oid=8533079&username=mkidger&RETRIEVAL_TYPE=POSTCARD&DATA RETRIEVAL ORIGIN=IGNORE
1342239979	SpirePhotSmallScan	1023	OT2_elellouc_2	Public	Pluto	http://archives.esac.esa.int/hsa/whsa-tap-server/data?observation_oid=8533084&username=mkidger&RETRIEVAL_TYPE=POSTCARD&DATA RETRIEVAL ORIGIN=IGNORE
1342240025	SpirePhotSmallScan	1024	OT2_elellouc_2	Public	Pluto	http://archives.esac.esa.int/hsa/whsa-tap-server/data?observation_oid=8533605&username=mkidger&RETRIEVAL_TYPE=POSTCARD&DATA RETRIEVAL ORIGIN=IGNORE
1342245905	SpirePhotSmallScan	1101	Calibration_rpspire_115	Public	88 Thisbe	http://archives.esac.esa.int/hsa/whsa-tap-server/data?observation_oid=8533684&username=mkidger&RETRIEVAL_TYPE=POSTCARD&DATA RETRIEVAL ORIGIN=IGNORE
1342246580	SpirePhotLargeScan	1116	GT2_mviero_1	Public		http://archives.esac.esa.int/hsa/whsa-tap-server/data?observation_oid=8533664&username=mkidger&RETRIEVAL_TYPE=POSTCARD&DATA RETRIEVAL ORIGIN=IGNORE

						YPE=POSTCARD&DATA RETRIEVAL ORIGIN=IGNORE
1342246588	SpirePhotSmallScan	1116	Calibration_rpspire_117	Public	8 Flora	http://archives.esac.esa.int/hsa/whsa-tap-server/data?observation_oid=8533898&username=mkidger&RETRIEVAL_TYPE=POSTCARD&DATA RETRIEVAL ORIGIN=IGNORE
1342246589	SpirePhotSmallScan	1116	Calibration_rpspire_117	Public	93 Minerva	http://archives.esac.esa.int/hsa/whsa-tap-server/data?observation_oid=8533911&username=mkidger&RETRIEVAL_TYPE=POSTCARD&DATA RETRIEVAL ORIGIN=IGNORE
1342246596	SpirePhotSmallScan	1116	OT1_lho_1	Public		http://archives.esac.esa.int/hsa/whsa-tap-server/data?observation_oid=8533894&username=mkidger&RETRIEVAL_TYPE=POSTCARD&DATA RETRIEVAL ORIGIN=IGNORE
1342246632	SpirePhotLargeScan	1117	GT2_mviero_1	Public		http://archives.esac.esa.int/hsa/whsa-tap-server/data?observation_oid=8533909&username=mkidger&RETRIEVAL_TYPE=POSTCARD&DATA RETRIEVAL ORIGIN=IGNORE
1342247216	SpirePhotLargeScan	1135	GT2_mviero_1	Public		http://archives.esac.esa.int/hsa/whsa-tap-server/data?observation_oid=8533940&username=mkidger&RETRIEVAL_TYPE=POSTCARD&DATA RETRIEVAL ORIGIN=IGNORE
1342247220	SpirePhotLargeScan	1135	OT2_mviero_2	Public		http://archives.esac.esa.int/hsa/whsa-tap-server/data?observation_oid=8533916&username=mkidger&RETRIEVAL_TYPE=POSTCARD&DATA RETRIEVAL ORIGIN=IGNORE
1342247232	SpirePhotSmallScan	1136	Calibration_rpspire_119	Public	6 Hebe	http://archives.esac.esa.int/hsa/whsa-tap-server/data?observation_oid=8533934&username=mkidger&RETRIEVAL_TYPE=POSTCARD&DATA RETRIEVAL ORIGIN=IGNORE
1342247236	SpirePhotSmallScan	1136	Calibration_rpspire_119	Public	88 Thisbe	http://archives.esac.esa.int/hsa/whsa-tap-server/data?observation_oid=8542029&username=mkidger&RETRIEVAL_TYPE=POSTCARD&DATA RETRIEVAL ORIGIN=IGNORE
1342247238	SpirePhotSmallScan	1136	OT1_jstevens_1	Public		http://archives.esac.esa.int/hsa/whsa-tap-server/data?observation_oid=8534299&username=mkidger&RETRIEVAL_TYPE=POSTCARD&DATA RETRIEVAL ORIGIN=IGNORE
1342247275	SpirePhotSmallScan	1136	OT2_eegami_6	Public		http://archives.esac.esa.int/hsa/whsa-tap-server/data?observation_oid=8534293&username=mkidger&RETRIEVAL_TYPE=POSTCARD&DATA RETRIEVAL ORIGIN=IGNORE
1342247276	SpirePhotSmallScan	1136	Calibration_rpspire_119	Public	37 Fides	http://archives.esac.esa.int/hsa/whsa-tap-server/data?observation_oid=8534256&username=mkidger&RETRIEVAL_TYPE=POSTCARD&DATA RETRIEVAL ORIGIN=IGNORE
1342247277	SpirePhotSmallScan	1136	Calibration_rpspire_119	Public	47 Aglaja	http://archives.esac.esa.int/hsa/whsa-tap-server/data?observation_oid=8534577&username=mkidger&RETRIEVAL_TYPE=POSTCARD&DATA RETRIEVAL ORIGIN=IGNORE
1342247859	SpirePhotLargeScan	1155	KPGT_soliver_1	Public		http://archives.esac.esa.int/hsa/whsa-tap-server/data?observation_oid=8534510&username=mkidger&RETRIEVAL_TYPE=POSTCARD&DATA RETRIEVAL ORIGIN=IGNORE

						YPE=POSTCARD&DATA RETRIEVAL ORIGIN=IGNORE
1342247860	SpirePhotLargeScan	1155	KPGT_soliver_1	Public		http://archives.esac.esa.int/hsa/whsa-tap-server/data?observation_oid=8613935&username=mkidger&RETRIEVAL_TYPE=POSTCARD&DATA RETRIEVAL ORIGIN=IGNORE
1342247861	SpirePhotLargeScan	1155	KPGT_soliver_1	Public		http://archives.esac.esa.int/hsa/whsa-tap-server/data?observation_oid=8535140&username=mkidger&RETRIEVAL_TYPE=POSTCARD&DATA RETRIEVAL ORIGIN=IGNORE
1342247955	SpirePhotLargeScan	1156	OT1_lho_1	Public		http://archives.esac.esa.int/hsa/whsa-tap-server/data?observation_oid=8614197&username=mkidger&RETRIEVAL_TYPE=POSTCARD&DATA RETRIEVAL ORIGIN=IGNORE
1342247959	SpirePhotSmallScan	1156	Calibration_rpspire_123	Public	8 Flora	http://archives.esac.esa.int/hsa/whsa-tap-server/data?observation_oid=8614215&username=mkidger&RETRIEVAL_TYPE=POSTCARD&DATA RETRIEVAL ORIGIN=IGNORE
1342247975	SpirePhotSmallScan	1156	Calibration_rpspire_123	Public	173 Ino	http://archives.esac.esa.int/hsa/whsa-tap-server/data?observation_oid=8535255&username=mkidger&RETRIEVAL_TYPE=POSTCARD&DATA RETRIEVAL ORIGIN=IGNORE
1342247987	SpirePhotSmallScan	1156	Calibration_rpspire_123	Public	2 Pallas	http://archives.esac.esa.int/hsa/whsa-tap-server/data?observation_oid=8535297&username=mkidger&RETRIEVAL_TYPE=POSTCARD&DATA RETRIEVAL ORIGIN=IGNORE
1342247993	SpirePhotLargeScan	1156	OT2_mviero_2	Public		http://archives.esac.esa.int/hsa/whsa-tap-server/data?observation_oid=8535207&username=mkidger&RETRIEVAL_TYPE=POSTCARD&DATA RETRIEVAL ORIGIN=IGNORE
1342247994	SpirePhotLargeScan	1156	OT2_mviero_2	Public		http://archives.esac.esa.int/hsa/whsa-tap-server/data?observation_oid=8535232&username=mkidger&RETRIEVAL_TYPE=POSTCARD&DATA RETRIEVAL ORIGIN=IGNORE
1342247995	SpirePhotLargeScan	1156	OT2_mviero_2	Public		http://archives.esac.esa.int/hsa/whsa-tap-server/data?observation_oid=8535389&username=mkidger&RETRIEVAL_TYPE=POSTCARD&DATA RETRIEVAL ORIGIN=IGNORE
1342247996	SpirePhotLargeScan	1156	OT2_mviero_2	Public		http://archives.esac.esa.int/hsa/whsa-tap-server/data?observation_oid=8535452&username=mkidger&RETRIEVAL_TYPE=POSTCARD&DATA RETRIEVAL ORIGIN=IGNORE
1342247997	SpirePhotLargeScan	1156	OT2_mviero_2	Public		http://archives.esac.esa.int/hsa/whsa-tap-server/data?observation_oid=8535691&username=mkidger&RETRIEVAL_TYPE=POSTCARD&DATA RETRIEVAL ORIGIN=IGNORE
1342247998	SpirePhotLargeScan	1156	OT2_mviero_2	Public		http://archives.esac.esa.int/hsa/whsa-tap-server/data?observation_oid=8535773&username=mkidger&RETRIEVAL_TYPE=POSTCARD&DATA RETRIEVAL ORIGIN=IGNORE
1342248000	SpirePhotLargeScan	1156	OT2_mviero_2	Public		http://archives.esac.esa.int/hsa/whsa-tap-server/data?observation_oid=8535655&username=mkidger&RETRIEVAL_TYPE=POSTCARD&DATA RETRIEVAL ORIGIN=IGNORE

						YPE=POSTCARD&DATA RETRIEVAL ORIGIN=IGNORE
1342248001	SpirePhotLargeScan	1156	OT2_mviero_2	Public		http://archives.esac.esa.int/hsa/whsa-tap-server/data?observation_oid=8613875&username=mkidger&RETRIEVAL_TYPE=POSTCARD&DATA RETRIEVAL ORIGIN=IGNORE
1342248005	SpirePhotSmallScan	1156	OT1_msikora_1	Public	AO0235+16	http://archives.esac.esa.int/hsa/whsa-tap-server/data?observation_oid=8613914&username=mkidger&RETRIEVAL_TYPE=POSTCARD&DATA RETRIEVAL ORIGIN=IGNORE
1342250325	SpirePhotSmallScan	1201	Calibration_rpspire_130	Public	1 Ceres	http://archives.esac.esa.int/hsa/whsa-tap-server/data?observation_oid=8613957&username=mkidger&RETRIEVAL_TYPE=POSTCARD&DATA RETRIEVAL ORIGIN=IGNORE
1342250347	SpirePhotSmallScan	1201	Calibration_rpspire_130	Public	3 Juno	http://archives.esac.esa.int/hsa/whsa-tap-server/data?observation_oid=8614003&username=mkidger&RETRIEVAL_TYPE=POSTCARD&DATA RETRIEVAL ORIGIN=IGNORE
1342250623	SpirePhotSmallScan	1196	Calibration_rpspire_128	Public	52 Europa	http://archives.esac.esa.int/hsa/whsa-tap-server/data?observation_oid=8614046&username=mkidger&RETRIEVAL_TYPE=POSTCARD&DATA RETRIEVAL ORIGIN=IGNORE
1342250637	SpirePhotSmallScan	1196	Calibration_rpspire_128	Public	21 Lutetia	http://archives.esac.esa.int/hsa/whsa-tap-server/data?observation_oid=8535721&username=mkidger&RETRIEVAL_TYPE=POSTCARD&DATA RETRIEVAL ORIGIN=IGNORE
1342250643	SpirePhotSmallScan	1197	Calibration_rpspire_128	Public	1 Ceres	http://archives.esac.esa.int/hsa/whsa-tap-server/data?observation_oid=8535692&username=mkidger&RETRIEVAL_TYPE=POSTCARD&DATA RETRIEVAL ORIGIN=IGNORE
1342250780	SpirePhotSmallScan	1214	Calibration_rpspire_132	Public	7 Iris	http://archives.esac.esa.int/hsa/whsa-tap-server/data?observation_oid=8535667&username=mkidger&RETRIEVAL_TYPE=POSTCARD&DATA RETRIEVAL ORIGIN=IGNORE
1342250786	SpirePhotSmallScan	1214	Calibration_rpspire_132	Public	52 Europa	http://archives.esac.esa.int/hsa/whsa-tap-server/data?observation_oid=8535900&username=mkidger&RETRIEVAL_TYPE=POSTCARD&DATA RETRIEVAL ORIGIN=IGNORE
1342250802	SpirePhotSmallScan	1215	Calibration_rpspire_132	Public	21 Lutetia	http://archives.esac.esa.int/hsa/whsa-tap-server/data?observation_oid=8614759&username=mkidger&RETRIEVAL_TYPE=POSTCARD&DATA RETRIEVAL ORIGIN=IGNORE
1342250803	SpirePhotSmallScan	1215	Calibration_rpspire_132	Public	1 Ceres	http://archives.esac.esa.int/hsa/whsa-tap-server/data?observation_oid=8535863&username=mkidger&RETRIEVAL_TYPE=POSTCARD&DATA RETRIEVAL ORIGIN=IGNORE
1342251687	SpirePhotSmallScan	1235	Calibration_rpspire_136	Public	1 Ceres	http://archives.esac.esa.int/hsa/whsa-tap-server/data?observation_oid=8535894&username=mkidger&RETRIEVAL_TYPE=POSTCARD&DATA RETRIEVAL ORIGIN=IGNORE
1342251953	SpirePhotSmallScan	1236	Calibration_rpspire_136	Public	19 Fortuna	http://archives.esac.esa.int/hsa/whsa-tap-server/data?observation_oid=8611991&username=mkidger&RETRIEVAL_TYPE=POSTCARD&DATA RETRIEVAL ORIGIN=IGNORE

						YPE=POSTCARD&DATA RETRIEVAL ORIGIN=IGNORE
1342251954	SpirePhotSmallScan	1236	Calibration_rpspire_136	Public	20 Massalia	http://archives.esac.esa.int/hsa/whsa-tap-server/data?observation_oid=8612010&username=mkidger&RETRIEVAL_TYPE=POSTCARD&DATA RETRIEVAL ORIGIN=IGNORE
1342253388	SpirePhotSmallScan	1249	Calibration_rpspire_138	Public	1 Ceres	http://archives.esac.esa.int/hsa/whsa-tap-server/data?observation_oid=8612031&username=mkidger&RETRIEVAL_TYPE=POSTCARD&DATA RETRIEVAL ORIGIN=IGNORE
1342253411	SpirePhotSmallScan	1250	OT2_nzakamsk_1	Public		http://archives.esac.esa.int/hsa/whsa-tap-server/data?observation_oid=8612051&username=mkidger&RETRIEVAL_TYPE=POSTCARD&DATA RETRIEVAL ORIGIN=IGNORE
1342253415	SpirePhotSmallScan	1250	OT2_cxu_2	Public		http://archives.esac.esa.int/hsa/whsa-tap-server/data?observation_oid=8612077&username=mkidger&RETRIEVAL_TYPE=POSTCARD&DATA RETRIEVAL ORIGIN=IGNORE
1342253416	SpirePhotSmallScan	1250	OT2_cxu_2	Public		http://archives.esac.esa.int/hsa/whsa-tap-server/data?observation_oid=8536093&username=mkidger&RETRIEVAL_TYPE=POSTCARD&DATA RETRIEVAL ORIGIN=IGNORE
1342253433	SpirePhotSmallScan	1250	Calibration_rpspire_138	Public	52 Europa	http://archives.esac.esa.int/hsa/whsa-tap-server/data?observation_oid=8536067&username=mkidger&RETRIEVAL_TYPE=POSTCARD&DATA RETRIEVAL ORIGIN=IGNORE
1342253434	SpirePhotSmallScan	1250	Calibration_rpspire_138	Public	20 Massalia	http://archives.esac.esa.int/hsa/whsa-tap-server/data?observation_oid=8536185&username=mkidger&RETRIEVAL_TYPE=POSTCARD&DATA RETRIEVAL ORIGIN=IGNORE
1342253435	SpirePhotSmallScan	1250	Calibration_rpspire_138	Public	19 Fortuna	http://archives.esac.esa.int/hsa/whsa-tap-server/data?observation_oid=8536205&username=mkidger&RETRIEVAL_TYPE=POSTCARD&DATA RETRIEVAL ORIGIN=IGNORE
1342254051	SpirePhotLargeScan	1265	DDT_mgroen01_9	Public	CW Leo	http://archives.esac.esa.int/hsa/whsa-tap-server/data?observation_oid=8536246&username=mkidger&RETRIEVAL_TYPE=POSTCARD&DATA RETRIEVAL ORIGIN=IGNORE
1342254068	SpirePhotSmallScan	1265	Calibration_rpspire_140	Public	511 Davida	http://archives.esac.esa.int/hsa/whsa-tap-server/data?observation_oid=8536266&username=mkidger&RETRIEVAL_TYPE=POSTCARD&DATA RETRIEVAL ORIGIN=IGNORE
1342254069	SpirePhotSmallScan	1265	Calibration_rpspire_140	Public	10 Hygiea	http://archives.esac.esa.int/hsa/whsa-tap-server/data?observation_oid=8536158&username=mkidger&RETRIEVAL_TYPE=POSTCARD&DATA RETRIEVAL ORIGIN=IGNORE
1342254082	SpirePhotSmallScan	1264	Calibration_rpspire_140	Public	65 Cybele	http://archives.esac.esa.int/hsa/whsa-tap-server/data?observation_oid=8536264&username=mkidger&RETRIEVAL_TYPE=POSTCARD&DATA RETRIEVAL ORIGIN=IGNORE
1342254502	SpirePhotSmallScan	1271	Calibration_rpspire_142	Public	19 Fortuna	http://archives.esac.esa.int/hsa/whsa-tap-server/data?observation_oid=8536524&username=mkidger&RETRIEVAL_TYPE=POSTCARD&DATA RETRIEVAL ORIGIN=IGNORE

						YPE=POSTCARD&DATA RETRIEVAL ORIGIN=IGNORE
1342254514	SpirePhotSmallScan	1271	OT2_eegami_6	Public		http://archives.esac.esa.int/hsa/whsa-tap-server/data?observation_oid=8536453&username=mkidger&RETRIEVAL_TYPE=POSTCARD&DATA RETRIEVAL ORIGIN=IGNORE
1342254639	SpirePhotSmallScan	1273	OT2_eegami_5	Public		http://archives.esac.esa.int/hsa/whsa-tap-server/data?observation_oid=8536525&username=mkidger&RETRIEVAL_TYPE=POSTCARD&DATA RETRIEVAL ORIGIN=IGNORE
1342255059	SpirePhotSmallScan	1281	Calibration_rpspire_144	Public	65 Cybele	http://archives.esac.esa.int/hsa/whsa-tap-server/data?observation_oid=8536571&username=mkidger&RETRIEVAL_TYPE=POSTCARD&DATA RETRIEVAL ORIGIN=IGNORE
1342255075	SpirePhotSmallScan	1281	Calibration_rpspire_144	Public	Omega Cap	http://archives.esac.esa.int/hsa/whsa-tap-server/data?observation_oid=8536677&username=mkidger&RETRIEVAL_TYPE=POSTCARD&DATA RETRIEVAL ORIGIN=IGNORE
1342255105	SpirePhotLargeScan	1281	OT1_lmontier_1	Public		http://archives.esac.esa.int/hsa/whsa-tap-server/data?observation_oid=8537471&username=mkidger&RETRIEVAL_TYPE=POSTCARD&DATA RETRIEVAL ORIGIN=IGNORE
1342255133	SpirePhotSmallScan	1282	Calibration_rpspire_144	Public	10 Hygiea	http://archives.esac.esa.int/hsa/whsa-tap-server/data?observation_oid=8537490&username=mkidger&RETRIEVAL_TYPE=POSTCARD&DATA RETRIEVAL ORIGIN=IGNORE
1342258348	SpirePhotLargeScan	1330	OT2_jgeach_1	Public		http://archives.esac.esa.int/hsa/whsa-tap-server/data?observation_oid=8537500&username=mkidger&RETRIEVAL_TYPE=POSTCARD&DATA RETRIEVAL ORIGIN=IGNORE
1342258349	SpirePhotLargeScan	1330	OT2_jgeach_1	Public		http://archives.esac.esa.int/hsa/whsa-tap-server/data?observation_oid=8538023&username=mkidger&RETRIEVAL_TYPE=POSTCARD&DATA RETRIEVAL ORIGIN=IGNORE
1342258350	SpirePhotLargeScan	1330	OT2_jgeach_1	Public		http://archives.esac.esa.int/hsa/whsa-tap-server/data?observation_oid=8537907&username=mkidger&RETRIEVAL_TYPE=POSTCARD&DATA RETRIEVAL ORIGIN=IGNORE
1342258351	SpirePhotLargeScan	1330	OT2_jgeach_1	Public		http://archives.esac.esa.int/hsa/whsa-tap-server/data?observation_oid=8537979&username=mkidger&RETRIEVAL_TYPE=POSTCARD&DATA RETRIEVAL ORIGIN=IGNORE
1342258352	SpirePhotLargeScan	1330	OT2_jgeach_1	Public		http://archives.esac.esa.int/hsa/whsa-tap-server/data?observation_oid=8537985&username=mkidger&RETRIEVAL_TYPE=POSTCARD&DATA RETRIEVAL ORIGIN=IGNORE
1342258378	SpirePhotSmallScan	1330	Calibration_rpspire_150	Public	2 Pallas	http://archives.esac.esa.int/hsa/whsa-tap-server/data?observation_oid=8537996&username=mkidger&RETRIEVAL_TYPE=POSTCARD&DATA RETRIEVAL ORIGIN=IGNORE
1342258391	SpirePhotLargeScan	1330	DDT_mustdo_5	Public		http://archives.esac.esa.int/hsa/whsa-tap-server/data?observation_oid=8537994&username=mkidger&RETRIEVAL_TYPE=POSTCARD&DATA RETRIEVAL ORIGIN=IGNORE

						YPE=POSTCARD&DATA RETRIEVAL ORIGIN=IGNORE
1342259388	SpirePhotLargeScan	1331	DDT_mustdo_5	Public		http://archives.esac.esa.int/hsa/whsa-tap-server/data?observation_oid=8538068&username=mkidger&RETRIEVAL_TYPE=POSTCARD&DATA RETRIEVAL ORIGIN=IGNORE
1342259414	SpirePhotLargeScan	1331	DDT_mustdo_5	Public		http://archives.esac.esa.int/hsa/whsa-tap-server/data?observation_oid=8537969&username=mkidger&RETRIEVAL_TYPE=POSTCARD&DATA RETRIEVAL ORIGIN=IGNORE
1342259418	SpirePhotSmallScan	1331	Calibration_rpspire_150	Public	40 Harmonia	http://archives.esac.esa.int/hsa/whsa-tap-server/data?observation_oid=8538138&username=mkidger&RETRIEVAL_TYPE=POSTCARD&DATA RETRIEVAL ORIGIN=IGNORE
1342259419	SpirePhotSmallScan	1331	Calibration_rpspire_150	Public	372 Palma	http://archives.esac.esa.int/hsa/whsa-tap-server/data?observation_oid=8537995&username=mkidger&RETRIEVAL_TYPE=POSTCARD&DATA RETRIEVAL ORIGIN=IGNORE
1342259420	SpirePhotSmallScan	1331	Calibration_rpspire_150	Public	29 Amphitrite	http://archives.esac.esa.int/hsa/whsa-tap-server/data?observation_oid=8538012&username=mkidger&RETRIEVAL_TYPE=POSTCARD&DATA RETRIEVAL ORIGIN=IGNORE
1342259430	SpirePhotLargeScan	1331	DDT_mustdo_5	Public		http://archives.esac.esa.int/hsa/whsa-tap-server/data?observation_oid=8538329&username=mkidger&RETRIEVAL_TYPE=POSTCARD&DATA RETRIEVAL ORIGIN=IGNORE
1342261487	SpirePhotSmallScan	1347	Calibration_rpspire_152	Public	88 Thisbe	http://archives.esac.esa.int/hsa/whsa-tap-server/data?observation_oid=8538436&username=mkidger&RETRIEVAL_TYPE=POSTCARD&DATA RETRIEVAL ORIGIN=IGNORE
1342261495	SpirePhotSmallScan	1347	OT1_abercian_1	Public		http://archives.esac.esa.int/hsa/whsa-tap-server/data?observation_oid=8538412&username=mkidger&RETRIEVAL_TYPE=POSTCARD&DATA RETRIEVAL ORIGIN=IGNORE
1342261506	SpirePhotSmallScan	1347	Calibration_rpspire_152	Public	40 Harmonia	http://archives.esac.esa.int/hsa/whsa-tap-server/data?observation_oid=8538402&username=mkidger&RETRIEVAL_TYPE=POSTCARD&DATA RETRIEVAL ORIGIN=IGNORE
1342261597	SpirePhotSmallScan	1348	Calibration_rpspire_152	Public	2 Pallas	http://archives.esac.esa.int/hsa/whsa-tap-server/data?observation_oid=8538423&username=mkidger&RETRIEVAL_TYPE=POSTCARD&DATA RETRIEVAL ORIGIN=IGNORE
1342261713	SpirePhotSmallScan	1348	OT1_mcluver_2	Public		http://archives.esac.esa.int/hsa/whsa-tap-server/data?observation_oid=8538465&username=mkidger&RETRIEVAL_TYPE=POSTCARD&DATA RETRIEVAL ORIGIN=IGNORE
1342263811	SpirePhotSmallScan	1375	Calibration_rpspire_156	Public	4 Vesta	http://archives.esac.esa.int/hsa/whsa-tap-server/data?observation_oid=8538479&username=mkidger&RETRIEVAL_TYPE=POSTCARD&DATA RETRIEVAL ORIGIN=IGNORE
1342263813	SpirePhotSmallScan	1375	Calibration_rpspire_156	Public	704 Interamnia	http://archives.esac.esa.int/hsa/whsa-tap-server/data?observation_oid=8538474&username=mkidger&RETRIEVAL_TYPE=POSTCARD&DATA RETRIEVAL ORIGIN=IGNORE

						YPE=POSTCARD&DATA RETRIEVAL ORIGIN=IGNORE
1342263863	SpirePhotSmallScan	1376	Calibration_rpspire_156	Public	6 Hebe	http://archives.esac.esa.int/hsa/whsa-tap-server/data?observation_oid=8538466&username=mkidger&RETRIEVAL_TYPE=POSTCARD&DATA RETRIEVAL ORIGIN=IGNORE
1342265294	SpirePhotSmallScan	1388	Calibration_rpspire_158	Public	37 Fides	http://archives.esac.esa.int/hsa/whsa-tap-server/data?observation_oid=8538475&username=mkidger&RETRIEVAL_TYPE=POSTCARD&DATA RETRIEVAL ORIGIN=IGNORE
1342265298	SpirePhotSmallScan	1388	OT1_rsahai_2	Public		http://archives.esac.esa.int/hsa/whsa-tap-server/data?observation_oid=8612348&username=mkidger&RETRIEVAL_TYPE=POSTCARD&DATA RETRIEVAL ORIGIN=IGNORE
1342265332	SpirePhotSmallScan	1388	Calibration_rpspire_158	Public	88 Thisbe	http://archives.esac.esa.int/hsa/whsa-tap-server/data?observation_oid=8538894&username=mkidger&RETRIEVAL_TYPE=POSTCARD&DATA RETRIEVAL ORIGIN=IGNORE
1342265333	SpirePhotSmallScan	1388	Calibration_rpspire_158	Public	6 Hebe	http://archives.esac.esa.int/hsa/whsa-tap-server/data?observation_oid=8538806&username=mkidger&RETRIEVAL_TYPE=POSTCARD&DATA RETRIEVAL ORIGIN=IGNORE
1342265344	SpirePhotSmallScan	1388	Calibration_rpspire_158	Public	704 Interamnia	http://archives.esac.esa.int/hsa/whsa-tap-server/data?observation_oid=8538848&username=mkidger&RETRIEVAL_TYPE=POSTCARD&DATA RETRIEVAL ORIGIN=IGNORE
1342265346	SpirePhotSmallScan	1388	OT2_peisenha_2	Public		http://archives.esac.esa.int/hsa/whsa-tap-server/data?observation_oid=8538899&username=mkidger&RETRIEVAL_TYPE=POSTCARD&DATA RETRIEVAL ORIGIN=IGNORE
1342265385	SpirePhotSmallScan	1388	Calibration_rpspire_158	Public	4 Vesta	http://archives.esac.esa.int/hsa/whsa-tap-server/data?observation_oid=8538860&username=mkidger&RETRIEVAL_TYPE=POSTCARD&DATA RETRIEVAL ORIGIN=IGNORE
1342265386	SpirePhotSmallScan	1388	Calibration_rpspire_158	Public	21 Lutetia	http://archives.esac.esa.int/hsa/whsa-tap-server/data?observation_oid=8538826&username=mkidger&RETRIEVAL_TYPE=POSTCARD&DATA RETRIEVAL ORIGIN=IGNORE
1342265387	SpirePhotSmallScan	1388	Calibration_rpspire_158	Public	173 Ino	http://archives.esac.esa.int/hsa/whsa-tap-server/data?observation_oid=8539344&username=mkidger&RETRIEVAL_TYPE=POSTCARD&DATA RETRIEVAL ORIGIN=IGNORE
1342270202	SpirePhotSmallScan	1434	Calibration_rpspire_164	Public	52 Europa	http://archives.esac.esa.int/hsa/whsa-tap-server/data?observation_oid=8539284&username=mkidger&RETRIEVAL_TYPE=POSTCARD&DATA RETRIEVAL ORIGIN=IGNORE
1342270204	SpirePhotSmallScan	1434	Calibration_rpspire_164	Public	47 Aglaja	http://archives.esac.esa.int/hsa/whsa-tap-server/data?observation_oid=8539315&username=mkidger&RETRIEVAL_TYPE=POSTCARD&DATA RETRIEVAL ORIGIN=IGNORE
1342270205	SpirePhotSmallScan	1434	Calibration_rpspire_164	Public	8 Flora	http://archives.esac.esa.int/hsa/whsa-tap-server/data?observation_oid=8539252&username=mkidger&RETRIEVAL_TYPE=POSTCARD&DATA RETRIEVAL ORIGIN=IGNORE

						YPE=POSTCARD&DATA_RETRIEVAL_ORIGIN=IGNORE
1342270206	SpirePhotSmallScan	1434	Calibration_rpspire_164	Public	37 Fides	http://archives.esac.esa.int/hsa/whsa-tap-server/data?observation_oid=8539316&username=mkidger&RETRIEVAL_TYPE=POSTCARD&DATA_RETRIEVAL_ORIGIN=IGNORE
1342270207	SpirePhotSmallScan	1434	Calibration_rpspire_164	Public	173 Ino	http://archives.esac.esa.int/hsa/whsa-tap-server/data?observation_oid=8539337&username=mkidger&RETRIEVAL_TYPE=POSTCARD&DATA_RETRIEVAL_ORIGIN=IGNORE
1342270294	SpirePhotSmallScan	1434	OT2_hgomez_3	Public	NGC 2592	http://archives.esac.esa.int/hsa/whsa-tap-server/data?observation_oid=8614479&username=mkidger&RETRIEVAL_TYPE=POSTCARD&DATA_RETRIEVAL_ORIGIN=IGNORE
1342270325	SpirePhotSmallScan	1434	Calibration_rpspire_164	Public	1 Ceres	http://archives.esac.esa.int/hsa/whsa-tap-server/data?observation_oid=8539373&username=mkidger&RETRIEVAL_TYPE=POSTCARD&DATA_RETRIEVAL_ORIGIN=IGNORE
1342270326	SpirePhotSmallScan	1434	Calibration_rpspire_164	Public	21 Lutetia	http://archives.esac.esa.int/hsa/whsa-tap-server/data?observation_oid=8539366&username=mkidger&RETRIEVAL_TYPE=POSTCARD&DATA_RETRIEVAL_ORIGIN=IGNORE
1342270335	SpirePhotSmallScan	1434	Calibration_rpspire_164	Public	93 Minerva	http://archives.esac.esa.int/hsa/whsa-tap-server/data?observation_oid=8539248&username=mkidger&RETRIEVAL_TYPE=POSTCARD&DATA_RETRIEVAL_ORIGIN=IGNORE
1342270336	SpirePhotSmallScan	1434	Calibration_rpspire_164	Public	7 Iris	http://archives.esac.esa.int/hsa/whsa-tap-server/data?observation_oid=8539304&username=mkidger&RETRIEVAL_TYPE=POSTCARD&DATA_RETRIEVAL_ORIGIN=IGNORE

Table 3: The details for the 380 ObsIDs used in this study. From left to right the columns show: the ObsID; the observing mod, “SpirePhotSmallScan”= small map, “SpirePhotLargeScan” = large map (note that no SPIRE PACS Parallel Mode observations were included by the SPIRE ICC in the input for this catalogue); the OD; the proposal name for the observation; the access status of the data (“Restricted” means that the data was taken in a special, non-standard mode and, for this reason, the original data are not available to the community at large; the main target of the observation (only given for readily recognizable targets – where no details are given the observation is almost invariably of a cosmological field, or of the Galactic Plane); and the URL of the postcard of the observation, which can be used to assess the observation and its quality.

Examples of typical postcards are shown in Figure 4 for a (relatively) small map of a Milky Way field, dominated by the highly structured background from the Milky Way and Figure 5 for a large map of a cosmological field, dominated by the confusion noise of background galaxies.

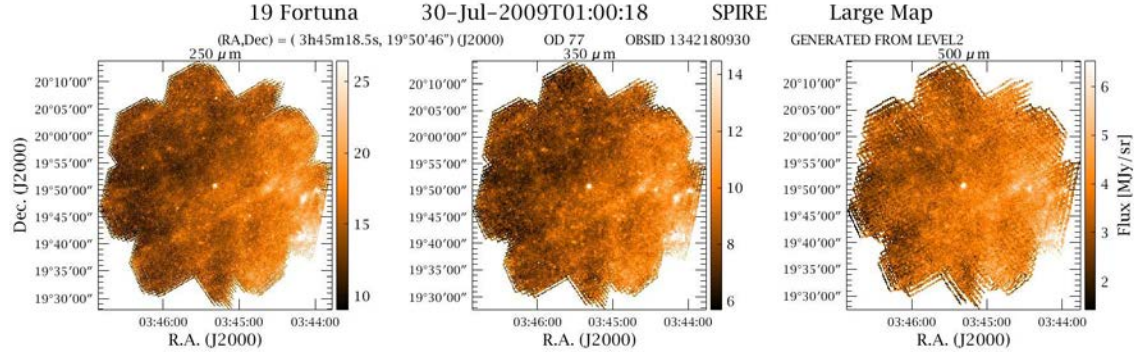


Figure 4: A typical asteroid calibration observation. This is a large SPIRE map of 19 Fortuna, projected in front of the Milky Way in Taurus, hence the highly-structured background.

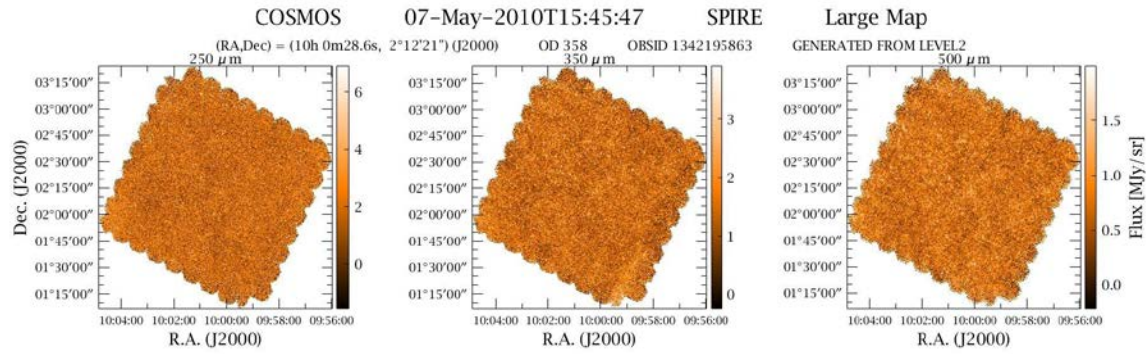


Figure 5: A typical observation of a cosmological field. This is a $2^\circ \times 2^\circ$ map of the COSMOS ([Cosmological Evolution Survey](#)) field. A field of this kind may contain several thousand galaxies. Detected asteroids in this field are numbers: 1401, 2303, 2576, 3229, 3896, 4976 & 5922.

8.9. Acknowledgements

We would like to register our gratitude to the Herschel/SPIRE Point Source Catalogue team and, in particular, Ivan Valtchanov at ESAC for making these data available to us for further study, compilation and analysis and for answering our questions on the data.

8.10. Important warning

The data presented here is given “as is”, as supplied by the SPIRE ICC. While some cross-checking was naturally carried out in the process of compilation of the catalogue and a few points could be eliminated visually as clearly inconsistent, in the main, by obligation, we have accepted the data, as supplied. It should be remembered then that the catalogue is a compilation of data supplied in good faith by third parties, with the natural limitations and caveats that this entails.

9. The SPIRE instrument and its data

For a full description of the SPIRE instrument and its capabilities, we recommend the overview paper of [Griffin et al. 2010](#) and the SPIRE Handbook ([Valtchanov, 2017](#)). Within these will be found ample references to more detailed descriptions and documentation, should these be required.

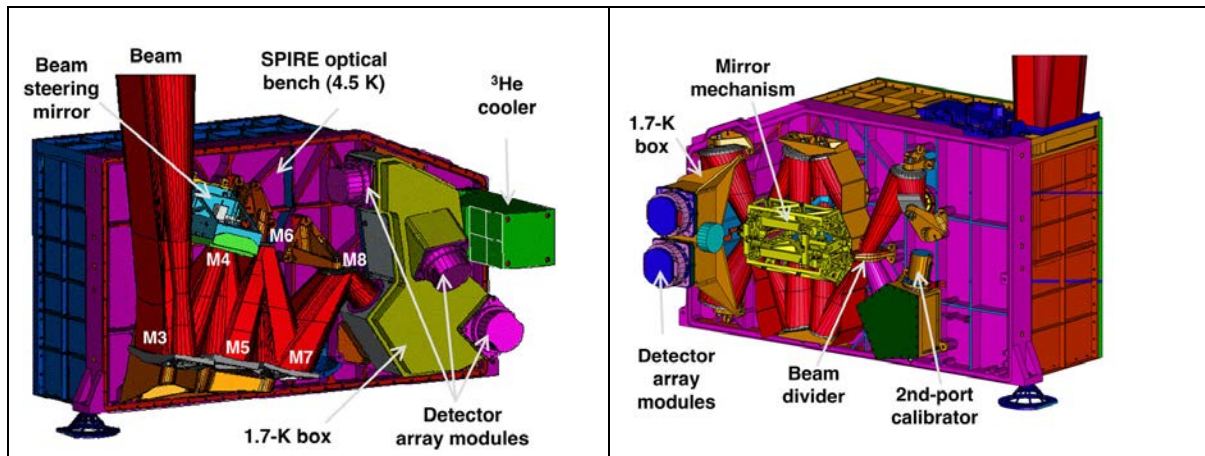
9.1. Background information about SPIRE

SPIRE consists of a three-band imaging photometer and an imaging Fourier Transform Spectrometer (FTS). The photometer carries out broad-band photometry ($\Delta\lambda/\lambda \approx 3$) in three spectral bands centred on approximately 250, 350 and 500 μm , and the FTS uses two overlapping bands to cover 191-671 μm (447-1568 GHz).

The scientific rationale for the photometer and spectrometer design are given in [Griffin et al. 2010](#), which also provides a good summary of the SPIRE instrument, capabilities, and observation techniques, with numerous references to relevant work. For a more technical guide to SPIRE, we refer you to the [SPIRE Design Description](#). can be found on the [Herschel SPIRE Library pages](#) [Top Level background in [Level 1](#); more technical documentation in [Level 2](#); and the most detailed and technical documentation in [Level 3](#)]. SPIRE consisted of two units (see Figure 6):

- 1) the cold focal plane unit (FPU) inside the Herschel cryostat on the payload module
- 2) the warm electronic unit on the Herschel service module

Both units were connected via a harness. The harness consisted of a cold part inside the cryostat vessel and a warm part outside. Care was taken in the arrangement of the warm harness to optimise electromagnetic compatibility (EMC), e.g. interference of the signals on the harness by electrical switching of the solar panels.



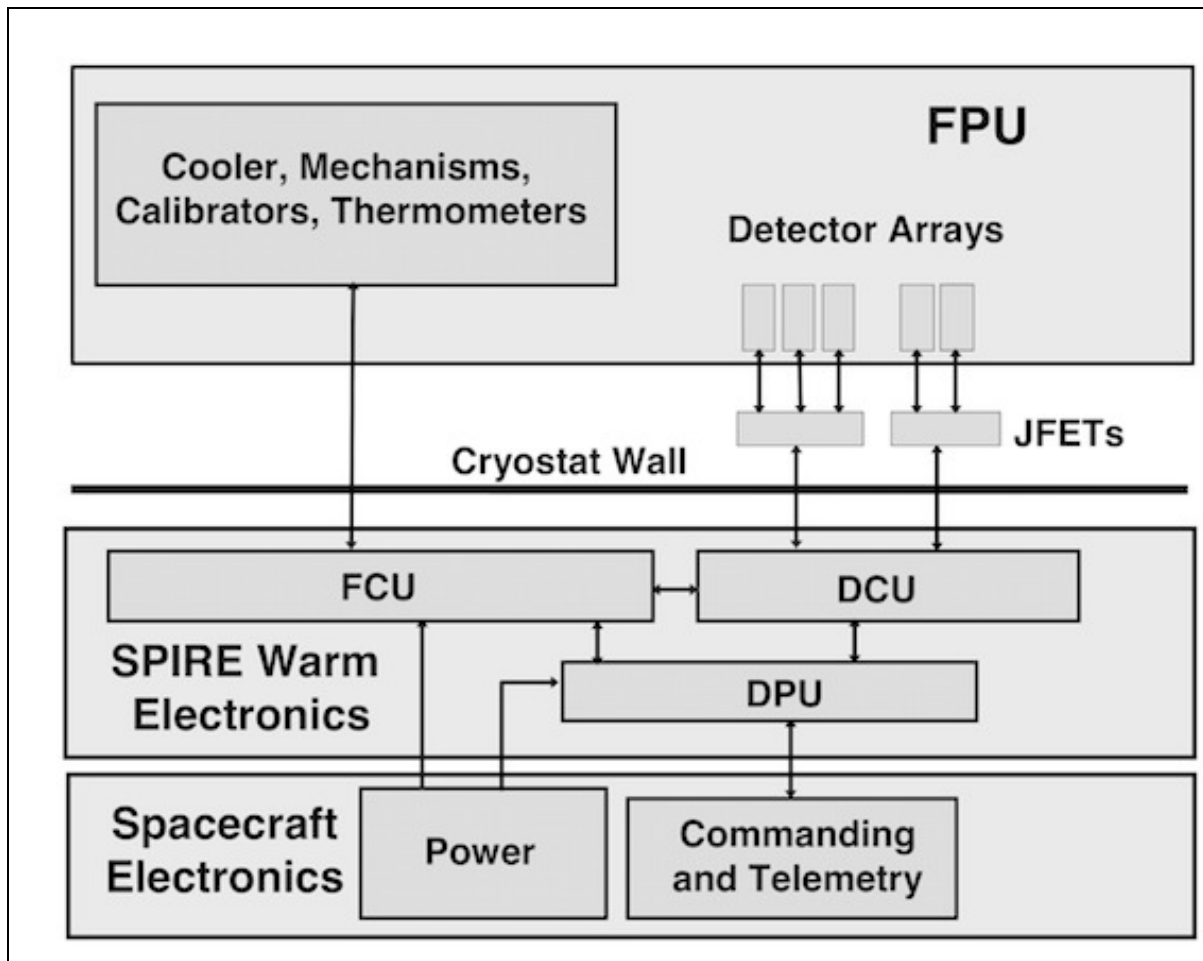


Figure 6: The main components of SPIRE. Top left: Cold FPU ($T \approx 1.7$ K) on the photometer side. Top right: spectrometer side. Bottom: A functional block diagram showing the components of the harness connecting the cold FPU inside the Herschel cryostat on the payload module with the warm electronic unit on the satellite service module.

9.2. Observing with SPIRE

Any observation with SPIRE (or any of the Herschel instruments) was performed following an Astronomical Observation Request (AOR) made by the observer. The AOR was constructed by the observer by filling in an Astronomical Observation Template (AOT) in the Herschel Observation Planning Tool, HSpot. Each template contained options to be selected and parameters to be filled in, such as target name and coordinates, observing mode etc. How to do this is explained in detail in the [HSpot user's manual](#) and the SPIRE Observer's Manual (aka, the [SPIRE Handbook](#)). The AOR content was subsequently translated into instrument and telescope/spacecraft commands, which were up-linked to the observatory for the observation to be executed. One special feature of SPIRE commanding was the use of On-board Control Procedures (OBCPs), command macros composed of a logical sequence of low-level commands needed to execute a certain type of observation, which were stored on-board. This reduced the telecommand bandwidth considerably, because only the name of the OBCP and the related parameters, whose values depended on the AOT parameter selection of the observer, had to be uplinked as part of the Mission Time-Line. The OBCPs were therefore essential elements of the AOT commanding design.

The AOTs evolved in the first year of the mission as more efficient ways to carry out observations

were created, so some of the standard AOTs used during the Performance Verification (PV) and Science Demonstration (SD) Phases (July–Dec, Oct–Dec 2009, respectively) were subsequently discontinued, and most were slightly changed.

Observations were made up of logical operations, such as configuring the instrument, initialisation, and science data-taking operations. These logical operations are referred to as building blocks (or just “blocks”). The science operations were usually repeated several times to achieve the requested SNR and/or to map a given sky area.

The photometer opto-mechanical layout is shown in the top-left panel of Figure 6. It is an all-reflective design ([Dohlen et al. 2000](#)) except for the dichroics used to direct the three bands onto the bolometer arrays, and the filters used to define the passbands ([Ade et al. 2006](#)). The input mirror M3, lying below the telescope focus, receives the f/8.7 telescope beam and forms an image of the secondary at the flat beam steering mirror (BSM), M4. Mirror M5 converts the focal ratio to f/5 and provides an intermediate focus at M6, which re-images the M4 pupil to a cold stop. The input optics are common to the photometer and spectrometer and the separate spectrometer field of view is directed to the other side of the optical bench panel by a pick-off mirror close to M6. The 4.5-K optics are mounted on the SPIRE internal optical bench. Mirrors M7, M8 and a subsequent mirror inside the 1.7-K box form a one-to-one optical relay to bring the M6 focal plane to the detectors. The 1.7-K enclosure also contains the three detector arrays and two dichroic beam splitters to direct the same field of view onto the arrays so that it can be observed simultaneously in the three bands. The images in each band are diffraction-limited over the 4'x8' field of view.

SPIRE used a beam-switching mirror (BSM). For photometric observations the BSM is moved on a pattern around the nominal position of the source. It can chop up to $\pm 2'$ along the long axis of the Photometer's 4x8' field of view and simultaneously chop in the orthogonal direction by up to 3000. This two-axis motion allows “jiggling” of the pointing to create fully sampled image of the sky. The nominal BSM chop frequency for the photometer is 1 Hz, however this chop and jiggle mode was never used for science observations. For scanning observations, the BSM is kept at its home position.

This SPIRE observing template used the SPIRE photometer to make simultaneous photometric observations in the three photometer bands (250, 350 and 500 μm). It could be used with three different observing modes:

- Large area maps: This mode was for covering large areas of sky or extended sources larger than 5 arcmin diameter. The map is made by scanning the telescope.
- Small area maps: This was for sources or areas with diameters smaller than 5 arcmin. The map is made by two short cross-scans with the telescope.
- Point source photometry: This mode was for photometric observations of isolated point sources. It used chopping, jiggling and nodding, observing the source at all times. This mode was never used for science observations.

9.3. Pipeline processing

Here we give the basics of SPIRE photometry pipeline processing. Extensive information is available

in the references cited herewithin.

All Herschel observations were processed automatically by SPG (Systematic Product Generator) pipelines at the HSC, and placed in the HSA for users to download. In Section 8.4 the products found in these Observation Contexts are described, and in this chapter the pipelines that were run to create those products are explained. The SPG pipeline scripts together with a selection of interactive pipeline scripts can be found in HIPE. There are scripts provided for the various AOTs (observing modes) or for various science cases. The pipeline scripts are explained in full detail in the [SPIRE Data Reduction Guide](#) (SDRG) for spectroscopy and photometry. Data products used are identified by camera: PSW – Photometer Short Wavelength – for 250 microns; PMW – Photometer Medium Wavelength – for 250 microns; and PLW – Photometer Long Wavelength – for 500 microns.

The reader is referred to [Valtchanov \(2017\)](#) for a detailed description of SPIRE products. A brief summary is shown in Figure 7.

Folder	Sub-folder	Filename pattern
level0	*BuildingBlockProduct	hspire<OBSID>_<BBID><NNNN>_00rst_ID
level0_5	*EdpBlockContext	hspirephotometer<OBSID>_a103<NNNN>_10psp_ID
level1	*PointedPhotTimeline	hspirephotometer<OBSID>_a103<NNNN>_10psp_ID
level2	extdPxW	hspire<ARR><OBSID>_20pxmp_ID
	extdPxWdiag	hspire<ARR><OBSID>_20pdd_ID
	psrcPxW	hspire<ARR><OBSID>_20pmp_ID
	psrcPxWdiag	hspire<ARR><OBSID>_20pdd_ID
	ssoPxW	hspire<ARR><OBSID>_20ssomp_ID
	ssoPxWdiag	hspire<ARR><OBSID>_20pmp_ID
	hiresPxW	hspire<ARR><OBSID>_20hirespxmp_ID
level2_5	Same folders as level2	Same pattern as Level 2 except *<OBSID>_25* instead of *<OBSID>_20*
level3	extdPxW	hspire<ARR>_30pxmp_*

Notes: PxW denotes any of the three arrays, PSW=250 μ m, PMW=350 μ m or PLW=500 μ m. <OBSID> is the decimal OBSID, <ARR> is the array name and can be one of *psw*, *pmw* or *plw*. The ID is a unique product identification number. <NNNN> stands for the line scan number.

Figure 7: A summary table of SPIRE Products.

Standard Level 2 data products from the HSA were used. These are fully-processed science-ready images.

9.4. Completeness, reliability and other caveats

9.4.1. A note on application of data

Within this catalogue we have worked with data *as supplied* by the HSPSC Team. While we have applied our own filters and cross-checks, the reliability of the data presented here is evidently fundamentally limited by the extraction routines that were used, which are more fully described in the Explanatory Supplement to the SPIRE Point Source Catalogue. Cross-checks of interactively reduced photometry and automatic extraction showed that down to ~ 25 mJy the two datasets agreed quite closely (to within a few percent) but, at lower fluxes, obviously, the decreasing s/n introduces increasing dispersion. Similarly, careful cross-checks identified and eliminated a small percentage of “bad” data, manifested as false positives in the list of detections.

We note that a significant number of targets have large numbers of serendipitous observations, obtained over a wide range of time that allow us to check the reproducibility of the fluxes extracted

by the automated routines. For a few objects selected at random we see that the reproducibility is very high. For example, the nine ObIDs that include 2576 Yesenin give fluxes normalised to a Herschelcentric distance of 1 AU consistent to $\pm 3\%$ in all three SPIRE bands, with fluxes of 127, 64 and 37 mJy respectively. For a much brighter target – 1 Ceres – the reproducibility is around 1.5% at flux levels of 191000, 101000 and 36000 mJy respectively. These numbers give us confidence in the validity of the flux extraction over a wide range of flux levels.

9.4.2. Completeness

It must be warned that the Herschel/SPIRE Point Source Catalogue is not 100% complete, even at the highest flux levels. The source detection was optimized for point sources and missed sources that were significantly extended, such as nearby galaxies, however, this should not be an issue for the Solar System Objects that we compile, which are point sources. However, there is a factor that does affect seriously Solar System Objects: the extraction algorithms did not do very well at detecting point sources on top of strongly structured backgrounds, especially those in the Galactic Plane, so entire tiles of sky had to be eliminated where the median structure noise surpassed a certain threshold. This is an issue where the Galactic Plane crosses the ecliptic, which is the case in Scorpio and Sagittarius, hence we cannot include objects that were in these areas during the observations, even if they were (almost certainly) detected by SPIRE; similarly, there will be areas of the sky that were not sufficiently structured to be excluded in the analysis, but for which the background structure was sufficient to reduce significantly the detection efficiency.

In order to improve reliability, some rigorous filtering was used. This filtering is detailed in the [Explanatory Supplement to the Herschel/SPIRE Point Source Catalogue](#) and the reader is thus referred to that document for further details. Thus we need to point out that the absence of a source at a given position in a SPIRE observation, does not mean that it was absent at that wavelength in the respective SPIRE map: it may have been present in one of the eliminated tiles, or in a tile that was used, but not detected by the algorithms.

At the low flux levels, the completeness, according to simulations, drops below 90% for fluxes smaller than 50 mJy in a clean field, and at higher fluxes for more complex backgrounds, although there are deep fields in which many Solar System Objects were found down to a flux of ~ 2 mJy at 500 μm . The background confusion noise, that never drops below the extragalactic component, represents the fundamental limitation, while the number of scans and the scan speed are secondary factors that only matter appreciably in Fast Scan and Parallel modes. Completeness was also affected by a software error that left differently calibrated, so-called Serendipity Slew Data originating from telescope slews in the timeline data, leading to non-convergence and failures of parts of the photometry extraction. Only a low percentage of all catalogue objects were lost this way, but the effect is visible in many maps.

Herschel, executing a multitude of observing programs with different goals, left a sometimes quite arbitrary looking coverage of the sky. Even though the source extraction procedure was homogeneously applied to all sources detected, and the three scan map types are very similar in the way they are executed, their differences in scan speed, sampling rate, scan direction, and repetition factors added further to the inhomogeneous coverage of the sky. The effect on the dynamic range of

the noise levels across the covered sky was fortunately lowered by the aforementioned extragalactic confusion limit. Nevertheless, these factors must be well understood before embarking on any statistical studies using this material.

9.4.3. Source detection and reliability

Each of the three bands underwent an independent source detection. Users of the Herschel/SPIRE Point Source Catalogue should be aware that two or more catalogue objects at one wavelength can correspond to just one apparent point- or slightly extended source at a longer wavelength, especially when close to the confusion limit although, again, this should not be an issue for Solar System Objects.

Although a very high degree of reliability was achieved, as indicated by the statistics of number of expected source detections versus the number of actual detections, and visual inspection of several hundred catalogue positions in actual maps, there are a small number of false detections that result from high energy radiation impacts in the bolometers or electronics. Comparison of the four photometer values helps to weed out these objects that evaded the deglitching procedures of the processing pipeline. High Timeline Fitter fluxes, that are contrasting substantially smaller Sussextractor and DAOPHOT fluxes, are good indicators for an undetected glitch. Low coverage and proximity to a map edge are additional risk factors. On the other hand, a point source without peculiarities and consistent photometry in all four values could be used with great confidence.

In such a case, where all four photometry values were consistent and the point source flag was set, the Timeline Fitter value (TML) is the most accurate flux estimate down to flux levels of ~ 30 mJy. Relative photometric accuracies of 2% at fluxes greater 50 mJy are achieved in clean fields, which was also verified with Neptune, the primary flux calibrator of SPIRE. Below 30 mJy, background confusion and instrument noise start to take away the benefits of the method, and Daophot and Sussextractor perform similarly.

While for slightly extended sources, the Timeline Fitter 2 (TM2) value provides the best guess for an extended flux, while Sussextractor and TML are point source flux methods only, thus well-suited to point-source Solar System Objects that we consider. The Daophot method will measure a higher flux and is a good indicator for source extension, but due to the small aperture used, it will systematically underestimate extended source fluxes. It should be understood that these fluxes are subject to greater uncertainty, not only at low fluxes due to more free parameters, but also due to the implicit assumption of a Gaussian shape which may or may not be true. Here, we have used the best value supplied by Herschel/SPIRE Point Source Catalogue Team.

9.4.4. Solar System Object identification

We refer readers to the Explanatory Supplement to the Herschel/SPIRE Point Source Catalogue for more details. Here we summarise just a few salient points.

The latest available MPCorb database at the time of preparing the Herschel/SPIRE Point Source Catalogue was used as input (this corresponded to the version of April, 2016), containing orbital elements for 713 289 objects. The rapid rate of increase of the Minor Planet Center (MPC) database

means that this number has already increased by 75 000 since this exercise was carried out (as of the end of May 2019, the MPC database contained 794832 orbits (see the right panel of <https://minorplanetcenter.net/> for the up-to-date figure); however, as new detections are almost exclusively small and intrinsically faint objects, very few, if any of the new discoveries would have been detectable by Herschel anyway.

A pre-selection of candidate detections was made calculating a "worst-case" thermal flux for all targets in this database (i.e. assuming the highest possible flux). For all objects the "worst-case" geometry was defined as when the target is the closest to the observer at maximum solar illumination (e.g. a main belt asteroid is at its perihelion at zero phase angle with respect to the observer). For each object we used the Near-Earth Asteroid Thermal Model (Harris et al., 1989) to calculate the wavelength dependent flux densities of the thermal emission for the observing geometry above. A beaming parameter of 0.756 was used, as an average value for main belt asteroids and an albedo of 0.05 was assumed (for higher albedo, lower infrared flux), although with the absolute magnitude given from the MPCORB input file.

Using this combination of parameters gave a maximum possible flux. This eliminates most SSOs as, even in the most favourable possible circumstances they would never have been bright enough to be detected by SPIRE. Note too that Herschel's scheduling constraints did not allow objects to be observed close to solar opposition, thus observing circumstances were always sub-optimal compared to the assumptions given above.

Only objects for which the 250 μm thermal flux exceeded 6 mJy, equivalent to the approximate extragalactic confusion limit at this wavelength were considered potentially detectable. This eliminated 86% of all objects in the MPCORB database and reduced the number of potentially detectable objects to 97 663.

To check whether or not an SSO crossed an actual SPIRE map, the SPICE Toolkit (<https://naif.jpl.nasa.gov/naif/toolkit.html>) was used in IDL. SPK kernel (ephemeris) files were generated for the selected objects using the `smb_spk` script, written by Jon D. Giorgini (ftp://ssd.jpl.nasa.gov/pub/ssd/smb_spk) for the operation time of the Herschel Space Observatory, and the SPK kernel file for the Herschel Space Observatory itself.

Then, for each scan map, the position of the selected SSOs were calculated for three epochs: the beginning of scan, the mid-time and at the end, using the `CSPICE_SPKEZR` task with Converged Newtonian light time correction (see documentation at: https://naif.jpl.nasa.gov/pub/naif/toolkit_docs/IDL/icy/cspice_spkezs.html). The next step was that the position of the Herschel spacecraft was calculated for these epochs and compared with the actual FOV (derived from the images) and the RA, Dec position of the SSOs, as seen from Herschel. For each map the FOV was approximated by the four corners of a rectangle enclosing the map, in equatorial coordinates (this resulted in a slight overestimation of the area in all cases). If the SSO was found to be in the FOV it was included the database of possible detections.

Once a list of potentially visible SSOs was available, every map was checked to see whether or not the candidate SSO was indeed detected: the criterion was that it should be detected twice during the execution of the AOR to be regarded as confirmed. As some scan maps took a considerable time

to execute it was the case that the SSO would only be in the field for a fraction of the total dwell time on the target as the detector scanned over the position of the asteroid.

Detections were cross-checked against the predicted positions using the JPL HORIZONS/ISPY system. This showed typical errors in calculated coordinated from the SPIRE maps against the predicted coordinates of 0.41 ± 0.42 arcsec in R.A. and 0.13 ± 0.18 arcsec in DEC (i.e. < 0.1 pixels in both coordinates). This allowed very high confidence identifications of SSOs to be made. The confusion limit for SPIRE is 5.8, 6.3 and 6.8 mJy for 250, 350 and 500 μ m, respectively, providing a fundamental detection limit.

9.5. Methods

We refer readers to the Explanatory Supplement to the Herschel/SPIRE Point Source Catalogue for more details. Here we summarise just a few salient points.

The Timeline Fitter is operated in two different modes, indicated by the acronyms TML and TM2. The first fits an idealized circular Gaussian beam profile model with 17.6", 23.9", 35.2" FWHM for the three filter bands, respectively (see Figure 8). The second fits an elliptical Gaussian, leaving the two values for the FWHM and the rotation angle as free fitting parameters. It also allows for a tilted background plane. The background level is a free fit parameter in both modes. Both modes make a fit to the readouts within the central aperture and to those inside the background annulus. The radii of the central apertures and the background annuli are shown in Figure 8 and given in Table 4.

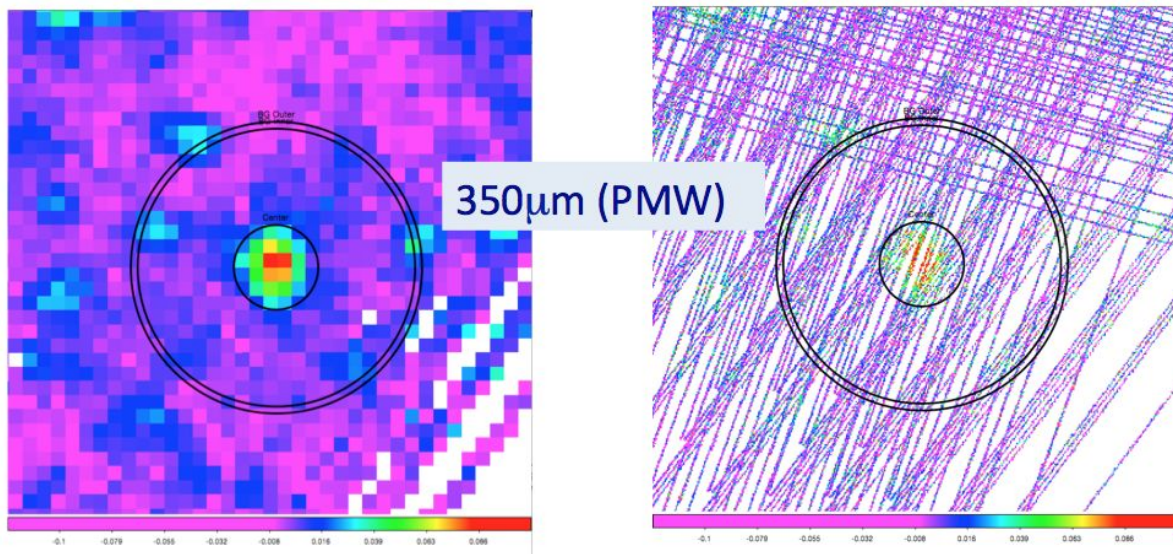


Figure 8: Illustration of the Timeline Fitter aperture and annulus plotted over a standard map with 10'' pixel size for a 350 μ m map on the left, and the same map rendered with 1'' pixels that better shows the actual detector timelines that are being fitted.

	250 microns	350 microns	500 microns
PSF FWHM (arcsec)	17.6	23.9	35.2
Pixel size (arcsec)	6	10	14
Detection s/n criterion	3	3	3

Aperture diameter (arcsec)	22	30	42
Inner annulus diameter (arcsec)	22	30	42
Outer annulus diameter (arcsec)	33	45	63

Table 4: The basic parameters for photometry of detected sources.

10. Catalogue description

10.1. Contents

The catalogue contains the following elements:

1. A listing of the Solar System Objects detected in each ObsID included in the catalogue.
2. A table of photometry for each SSO and ObsID.
3. A summary table of all SSOs detected, with the median normalised flux measured in each band.

10.2. Objects included

We started with 4550 *candidate* detections of SSOs. Each was inspected individually and duplicates/false detections eliminated. A total of 4202 serendipitous detections of 1174 objects remain and are listed in the catalogue, each in the three SPIRE photometric bands, giving a total of 12 606 fluxes. A summary of the dynamic classification of the objects included is given in Table 5.

Object Type	Number included
Main Belt Asteroids (MBAs)	1083 [Of which, dwarf planet MBAs: 1]
Amor Asteroids	14
Apollo Asteroids	5
Jupiter Trojans	57
Centaur	2
Trans-Neptunian Objects (TNOs)	13 [Of which, dwarf planet TNOs: 4]

Table 5: Classification of SSOs included in this catalogue. While the majority, unsurprisingly, are Main Belt asteroids, a substantial number of Jupiter Trojans are also detected, representing nearly 1% of the known objects in this class.

It comes as no surprise that the list is dominated by Main Belt Asteroids, which constitute 92% of the serendipitous detections. The greatest detection efficiency though is for Jupiter Trojans – almost 5% of the total number of serendipitous detections; we detect 57 of the total population of 7040 Jupiter Trojans (0.8%) that were known as of October 2018.

An indication of the relative weights of the different populations can be found in the compilation of all SPIRE photometry in the catalogue, shown in Figure 9.

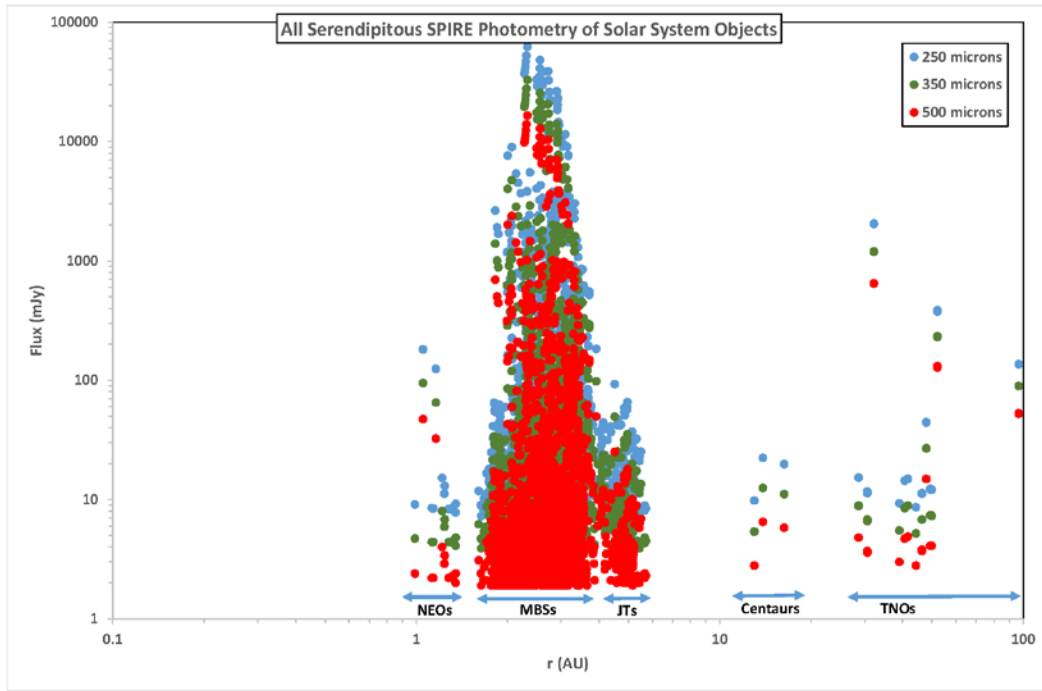


Figure 9: A compilation of all SPIRE serendipitous photometry of Solar System Objects. All the observations for the objects observed on multiple occasions over a range of dates are thus plotted individually, hence some objects are represented with multiple points. 250, 350 and 500-micron data are shown in blue, green and red respectively. An indication of the ranges of heliocentric distance (r) covered by objects of different dynamical classes is shown on the plot: NEOs, Near Earth Objects; MBAs, Main Belt Asteroids; JTs, Jupiter Trojans; Centaurs; and TNOs, Trans-Neptunian Objects. These ranges are indicative only: for example, a third object, 310071 (2010 KR59), appears within the range indicated for Centaurs; this object has a semi-major axis greater than 30AU and is thus classified as a TNO, although it was observed by Herschel when almost at perihelion. Only one object was observed at $r < 1$ AU as Herschel's observing geometry made such observations extremely difficult to schedule, while no objects were observed at $r > 100$ AU. As expected, the majority of observations correspond to MBAs, with Jupiter Trojans representing the second largest sub-set of data.

10.3. Description of the catalogue

This is provided in ASCII as two CSV files and one ASCII file:

1. A listing of ObsIDs used, called ObsIDs_Asteroids_SPIRE.csv, giving the basic information for each ObsID used (observing mode, OD of observation, proposal, release status, main target and postcard).

2. The main catalogue, named “Catalogue_Serendipitous_SPIRE_SSOs”, which contains photometry data for each ObsID and for each asteroid at each epoch. Below, we describe the column headings used and a description of contents.
3. A list of ObsIDs used to compile the catalogue, named “List_of_ObsIDs.txt”.

10.3.1. Listing of column headings used in the main catalogue

The column headers used in the catalogue are the following:

- NAIF ID
- IAU nomenclature
- Target Alternative names
- First Classification
- Dynamical Classification
- Second Dynamical Classification
- Classification Comment
- Obs id
- OD
- Start Time
- End Time
- Integration time
- Mode
- Instrument
- S/P
- Band wavelengths1
- Band wavelengths2
- Band wavelengths3
- Postcard
- Albedo

- + Stand dev albedo
- - Stand dev albedo
- B-V
- B-V errors +/-
- RA/Dec
- Illumination
- r
- Delta
- Phase (STO)
- Flux_250
- Flux stand. dev.(+/-)_250
- Flux_350
- Flux stand. dev.(+/-)_350
- Flux_500
- Flux stand. dev.(+/-)_500
- Comment Duplicity
- Flux 250/350
- Flux 250/500
- Flux 350/500
- Flux 250 (1AU)
- Flux 350 (1AU)
- Flux 500 (1AU)
- Name
- Median 250
- Median 350

- Median 500
- Sigma 250
- Sigma 350
- Sigma 500
- Points 250
- Points 350
- Points 500
- s/n 250
- s/n 350
- s/n 500

10.3.2. Catalogue format

For each ObsID, we give one entry per SSO identified in that ObsID. Where there were many SSOs identified in a single ObsID, there may be many lines of data associated with a single ObsID.

The largest number of SSOs in a single ObsID is 358, in ObsID 1342247216.

10.3.3. Sample catalogue entry for a single ObsID

A typical entry for a single ObsID, with a single SSO detection is as follows:

1342179029, 2001893, 1893, 1893 Jakoba (1971 UD), 1971 UD, Minor Planet, Main Belt asteroids, , , 42, 2009-06-25 01:55:39.0, 2009-06-25 02:57:23.0, 3704, SpirePhotoLargeScan, SPIRE, P, 250, 350, 500, N/A, 0.194, N/A, N/A, N/A, N/A, 11 20 13.36 +13 05 32.4 96.792, 2.77579, 2.90573, 20.6385, , 250, , 10.1, N/A, 350, , 5.3, N/A, 500, , 2.7, N/A, , , 1.91, 3.74, 1.96, 85.3, 44.7, 22.8

Note that not all fields contain values: empty fields are identified by successive commas separated by a space.

10.3.4. Description of contents of columns

10.3.4.1. ObsID

The ObsID within the HSA of the AOR that has been processed.

10.3.4.2. NAIF ID

NAIF is the Navigation and Ancillary Information Facility, used by SPICE. The Navigation and Ancillary Information Facility (NAIF), acting under the directions of NASA's Planetary Science Division, has built

an information system named "SPICE" to assist NASA scientists in planning and interpreting scientific observations from space-borne instruments, and to assist NASA engineers involved in modelling, planning and executing activities needed to conduct planetary exploration missions. The use of SPICE, which derives from its functions (**S**pacecraft ephemeris; **P**lanet, satellite, comet or asteroid ephemeris; **I**nstrument information; **O**rientation information – the transformation provided by the so-called **C**-matrix, which provides time-tagged pointing information; and **E**vents information – planned and un-planned mission activities), extends from mission concept development through the post-mission data analysis phase, including help with correlation of individual instrument data sets with those from other instruments on the same or on other spacecraft. The primary SPICE data sets are often called "kernels", or "kernel files." SPICE kernels are composed of navigation and other ancillary information that has been structured and formatted for easy access and correct use by the planetary science and engineering communities.

The NAIF ID is a unique identifier for solar system objects, both natural and artificial that allows a target to be linked to an ephemeris. This is increasingly used in ground-based observatories too to facilitate the observations of solar system targets. Information on NAIF IDs and their use can be found here: https://naif.jpl.nasa.gov/pub/naif/toolkit_docs/FORTRAN/req/naif_ids.html.

10.3.4.3. Number

The permanent number of the asteroid, as assigned by the IAU's Minor Planet Center.

10.3.4.4. IAU Nomenclature

The official IAU designation for the target according to the system as defined by the IAU Minor Planet Center. A formal number is assigned only when an asteroid's orbit is considered secure; this number is the permanent designation for the asteroid, to which a name may or may not be added after numbering. The listing of formal designations is given here:

<https://minorplanetcenter.net/iau/lists/NumberedMPs.html>

10.3.4.5. Alternative Names

Either blank (for low number asteroidal objects), or the provisional Minor Planet Center designation of year and half year of discovery, used since 1925. An explanation of this system can be found here:

<https://minorplanetcenter.net/iau/info/OldDesDoc.html>

10.3.4.6. First Classification

"Minor Planet" (asteroid), or "Minor Planet/Comet" (for objects with dual status).

10.3.4.7. Dynamical Classification

Here, we indicate if a body is a Near Earth Object, a Main Belt Asteroid (MBA), a Dwarf Planet, a Trojan, a Centaur, a TNO, etc.

10.3.4.8. Second Dynamical Classification

Where applicable for TNOs, a classification by sub-group (classical, plutino, etc).

10.3.4.9. Classification comment

Any additional information that may be of interest. For MBAs this may be a classification within the Main Belt (e.g. outer main belt, binary, family).

10.3.4.10. OD

The Observational Day when the observation was obtained.

10.3.4.11. Start Time

Start time of execution of the observation (UT).

10.3.4.12. End Time

End time of execution of the observation (UT).

10.3.4.13. Integration

Dwell time on the target (note that, for scan observations, the dwell time on any individual point in the field covered may be much smaller than this).

10.3.4.14. Mode

Instrument observing mode (Large Scan Map, Small Scan Map).

10.3.4.15. Instrument

Always SPIRE.

10.3.4.16. P/S

Photometer or Spectrometer: always Photometer.

10.3.4.17. Band wavelength1

SPIRE Short Wavelength (SSW): always 250 microns.

10.3.4.18. Band wavelength2

SPIRE Medium Wavelength (SMW): always 350 microns.

10.3.4.19. Band wavelength3

SPIRE Long Wavelength (SLW): always 500 microns.

10.3.4.20. Postcards

Link to postcard image, where available.

10.3.4.21. Albedo

Asteroid albedo, if known.

10.3.4.22. + Standard deviation albedo

Positive error on albedo (where known).

10.3.4.23. - Standard deviation albedo

Negative error on albedo (where known).

10.3.4.24. B-V

Asteroid B-V colour index (where known).

10.3.4.25. B-V errors \pm

Error on the B-V colour index (where known).

10.3.4.26. RA/Dec.

Asteroid coordinates at the mid-time of observation.

10.3.4.27. Illumination

Illuminated fraction of disk at time of observation.

10.3.4.28. r

Heliocentric distance in Astronomical Units (AU) at time of observation.

10.3.4.29. Delta

Herschelcentric distance in AU at time of observation.

10.3.4.30. Phase (STO)

Sun-Target-Observer (i.e. Herschel) angle.

10.3.4.31. Flux₂₅₀

The flux in millijansky at 250 microns given by the SPIRE Point Source Catalogue.

10.3.4.32. Flux standard deviation (\pm)₂₅₀

The standard deviation of the flux at 250 microns given by the SPIRE Point Source Catalogue (if

available).

10.3.4.33. Flux_350

The flux in millijansky at 350 microns given by the SPIRE Point Source Catalogue.

10.3.4.34. Flux standard deviation (\pm)_350

The standard deviation of the flux at 350 microns given by the SPIRE Point Source Catalogue (if available).

10.3.4.35. Flux_500

The flux in millijansky at 500 microns given by the SPIRE Point Source Catalogue.

10.3.4.36. Flux standard deviation (\pm)_500

The standard deviation of the flux at 500 microns given by the SPIRE Point Source Catalogue (if available).

10.3.4.37. Comment duplicity

Flagged as a duplicate if a duplicate observation was removed from this ObsID for this Solar System Object (see Section 8.3 and the Footnote 1 for an explanation).

10.3.4.38. 250/350

250/350 micron flux ratio.

10.3.4.39. 250/500

250/500 micron flux ratio.

10.3.4.40. 350/500

350/500 micron flux ratio.

10.3.4.41. Flux (250) 1AU

Flux at 250 microns normalised to 1AU Herschelcentric distance.

This is:

$$\text{Flux}(250) \text{ 1AU} = \text{Flux_250} * \text{Delta}^2.$$

10.3.4.42. Flux (350) 1AU

Flux at 350 microns normalised to 1AU Herschelcentric distance.

This is:

$$\text{Flux}(350) \text{ 1AU} = \text{Flux_350} * \text{Delta}^2.$$

10.3.4.43. Flux (500) 1AU

Flux at 500 microns normalised to 1AU Herschelcentric distance.

This is:

$$\text{Flux}(500) \text{ 1AU} = \text{Flux_500} * \text{Delta}^2.$$

10.4. Description of files provided

10.4.1. Plot of Solar System Objects observed in each ObsID

For each ObsID we provide a plot of measured flux at 250, 350 and 500 microns for all Solar System Objects detected in the ObsID against heliocentric distance. Where small numbers of SSOs are detected in a single ObsID, each object is identified by number, in order of increasing heliocentric distance, as illustrated in Figure 10. There are a total of 380 such plots included.

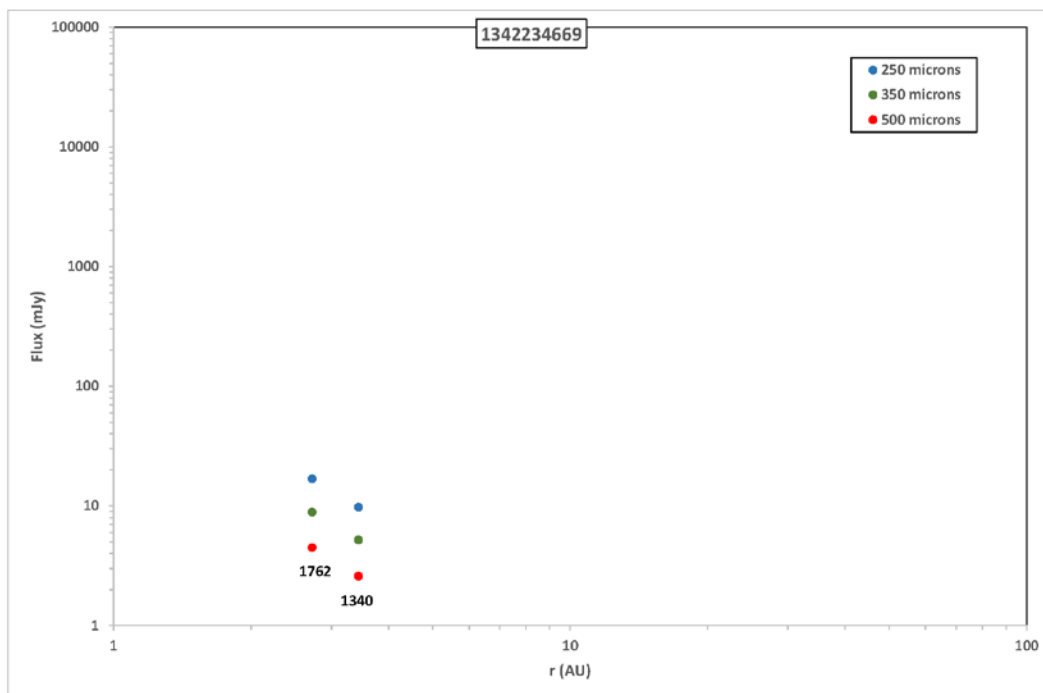


Figure 10: A sample plot of flux in millijansky against heliocentric distance for a simple ObsID in which only two SSOs are detected. Both objects are labelled with the permanent number.

On some occasions, though, dozens or even hundreds of SSOs may be detected within a single image: in one case, 357 individual Solar System Objects were detected in a single ObsID and, in another, 360 SSOs. It is impossible in these cases to label each SSO individually, thus a table is shown of the SSOs that are detected, ordered by heliocentric distance, starting in the top left-hand corner with the lowest heliocentric distance, running down successive columns and ending in the bottom

right-hand corner with the object that had the highest heliocentric distance when observed. An example of this kind is shown in Figure 11. In such cases we can see clearly the flux cut-off value that was applied for the three SPIRE bands.

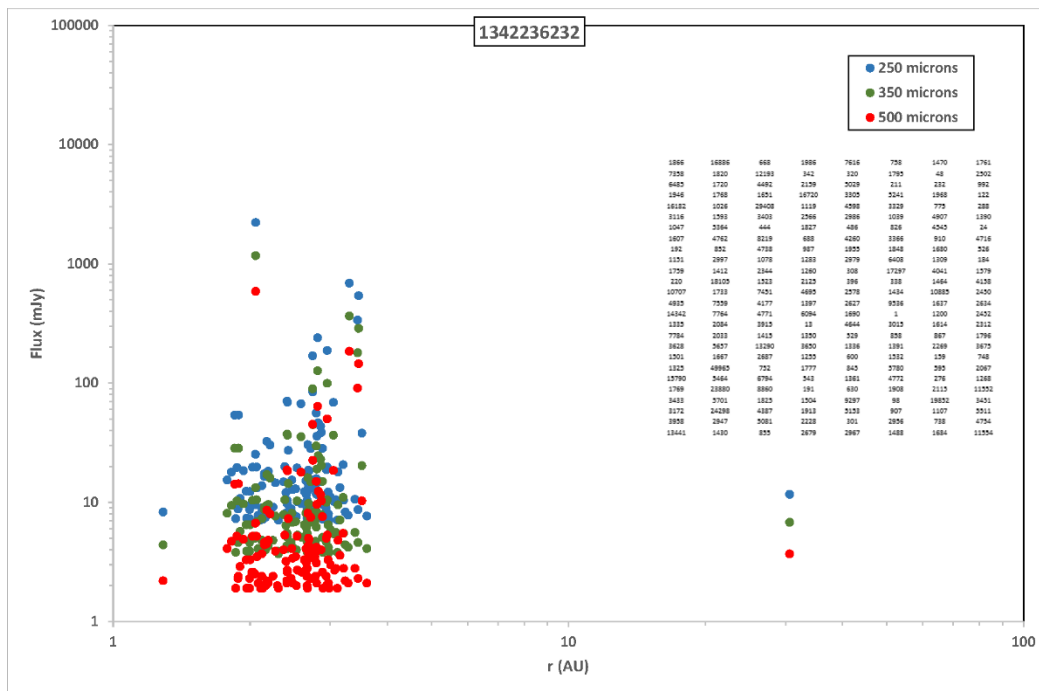


Figure 11: A sample plot of the more complex case in which a single ObsID (1342236232) contains many detected SSOs. There are numerous ObsIDs with more than 200 and even more than 300 detected asteroids in a single ObsID. In this case, it is impractical to label each point with the corresponding asteroid number. We limit ourselves to providing the table to the right in which all the detected SSOs are listed by number, in order of increasing heliocentric distance. The listing is by columns, starting with the object of lowest heliocentric distance in the top left-hand corner, continuing down the columns in turn, from left to right and ending with the object of largest heliocentric distance in the bottom right-hand side. The flux cut-off for detection is clearly visible.

10.4.2. Summary of photometry by Solar System Object

A summary of photometry for all detected Solar System Objects is shown in Table 6. In this table we list the fundamental parameters for each of the 1174 objects that were detected:

- Object name – number and name (if named). If not named, number and IAU provisional designation.
- Main dynamic classification – “Main belt asteroid”, “Mars crossing”, “Jupiter Trojan”, etc.
- Maximum, minimum and median heliocentric distance of observation by Herschel – heliocentric distances in AU.
- Median flux at 250 microns (mJy) – Median of all measured fluxes at 250 microns, previously corrected to a standard geocentric distance of 1AU.
- Median flux at 350 microns (mJy) – Median of all measured fluxes at 350 microns, previously

corrected to a standard geocentric distance of 1AU.

- Median flux at 500 microns (mJy) – Median of all measured fluxes at 500 microns, previously corrected to a standard geocentric distance of 1AU.
- Standard deviation of 250-micron flux – Standard deviation of all measured fluxes at 250 microns, previously corrected to a standard geocentric distance of 1AU.
- Standard deviation of 350-micron flux – Standard deviation of all measured fluxes at 350 microns, previously corrected to a standard geocentric distance of 1AU.
- Standard deviation of 500-micron flux – Standard deviation of all measured fluxes at 500 microns, previously corrected to a standard geocentric distance of 1AU.
- Number of observations – number of measured fluxes for the object included in the final catalogue.
- s/n at 250 microns – Pseudo-s/n, obtained by dividing the median flux at 250 microns by the standard deviation of all fluxes.
- s/n at 350 microns – Pseudo-s/n, obtained by dividing the median flux at 350 microns by the standard deviation of all fluxes.
- s/n at 500 microns – Pseudo-s/n, obtained by dividing the median flux at 500 microns by the standard deviation of all fluxes.
- ratio 250/350-micron flux – ratio of the median fluxes at 250 and 350 microns.
- ratio 250/500-micron flux – ratio of the median fluxes at 250 and 500 microns.
- ratio of 350/500-micron flux – ratio of the median fluxes at 350 and 500 microns.

10.4.3. Flux variation with heliocentric distance

We provide a total of 1206 flux curves. That is, flux corrected for geocentric distance against heliocentric distance at 250, 350 and 500 microns, for a total of 402 objects with multiple observations.

For all numbered objects up to 1000 (i.e. the brightest objects) and at least two observations, we provide a flux curve against heliocentric distance and calculate a power law fit of flux (corrected to a geocentric distance of 1 AU) against the heliocentric distance of observation. For numbered objects with numbers over 1000, we do not present a flux curve against heliocentric distance, save for those objects for which the range of observed heliocentric distance is greater than 0.07AU, sufficient to allow the relationship between flux and heliocentric distance to be determined above the errors in the extraction of fluxes. There is no particular special justification for using 0.07 AU – trials were made with larger and smaller numbers – save that it gives satisfactory results and the number of

objects included was (a) not excessive and (b) the graphs gave significant information in the immense majority of cases.

Given that the major factor in variations is normally the changing geocentric distance (Delta, or Δ), which modifies the observed flux by a factor of Δ^2 , all fluxes that we present are normalised to a standard geocentric distance $\Delta=1$ AU to remove these variations.

Table 7 presents the details of the calculated power law fits to the flux curves. It presents a summary of the photometric parameters for the flux curve for objects in this catalogue plus details of the calculated power law fits for the objects that were observed over a range of at least 0.07AU in heliocentric distance. The information presented is:

- Name – number, name (where named) and provisional designation for all objects.
- NAIF ID – NAIF ID corresponding to the permanent number.
- Maximum and minimum heliocentric distance of observation by Herschel – in AU, to give context to the Power Law fit.
- Number of Observations – number of observations in the final catalogue.
- Slope (b) of the 250-micron Flux v heliocentric distance power law ($F=a \cdot r^b$) – left blank if the range of heliocentric distance is <0.07 AU.
- Correlation coefficient r^2 – left blank if the range of heliocentric distance is <0.07 AU.
- Taxonomic type, where known – Following the SMASS (Small Main Belt Asteroid Spectral Survey) classification. While the majority of objects up to number 1000 have a known taxonomic type, the fraction of classified bodies from number 1000-5000 gets steadily smaller. Just one object in our compilation with number over 7500 has a known classification. Where known, the majority of objects are Type B, Type C, Type S and Type X³.

Sample flux curve plots are shown below for, 47 Aglaja, a typical, well-observed, bright Main Belt object, at 500 (Figure 12), 350 (Figure 13) and 250 microns (Figure 14). The behaviour in all three

³ Type B and C are carbonaceous asteroids. Type C is the most common type of asteroid. Type B asteroids are a sub-class of carbonaceous asteroids that are volatile-rich and found principally in the outer part of the Asteroid Belt; they are sometimes known as Pallasites, because they are common in the Pallas Family of asteroids, of which 2 Pallas is the largest member. An important difference is that Type C asteroids are normally red and of low, or very low albedo, while Type B have typically higher albedo and bluer colours. An “h” in the type means that hydrated minerals are seen in the spectrum.

Type S are asteroids that are predominantly of silicate composition, with relatively high albedo. Type S asteroids are increasingly common towards the inner edge of the Main Belt. A lower case letter indicates a transitional object with the old, “A”, “K”, etc. classifications.

Type X asteroids are all classified on the basis of features in the visible spectrum (an absorption around 490nm, or a broad emission from 500-800nm) and may actually be of quite diverse composition.

bands is similar, with calculated power law indices of -0.32, -0.33 and -0.35 respectively.

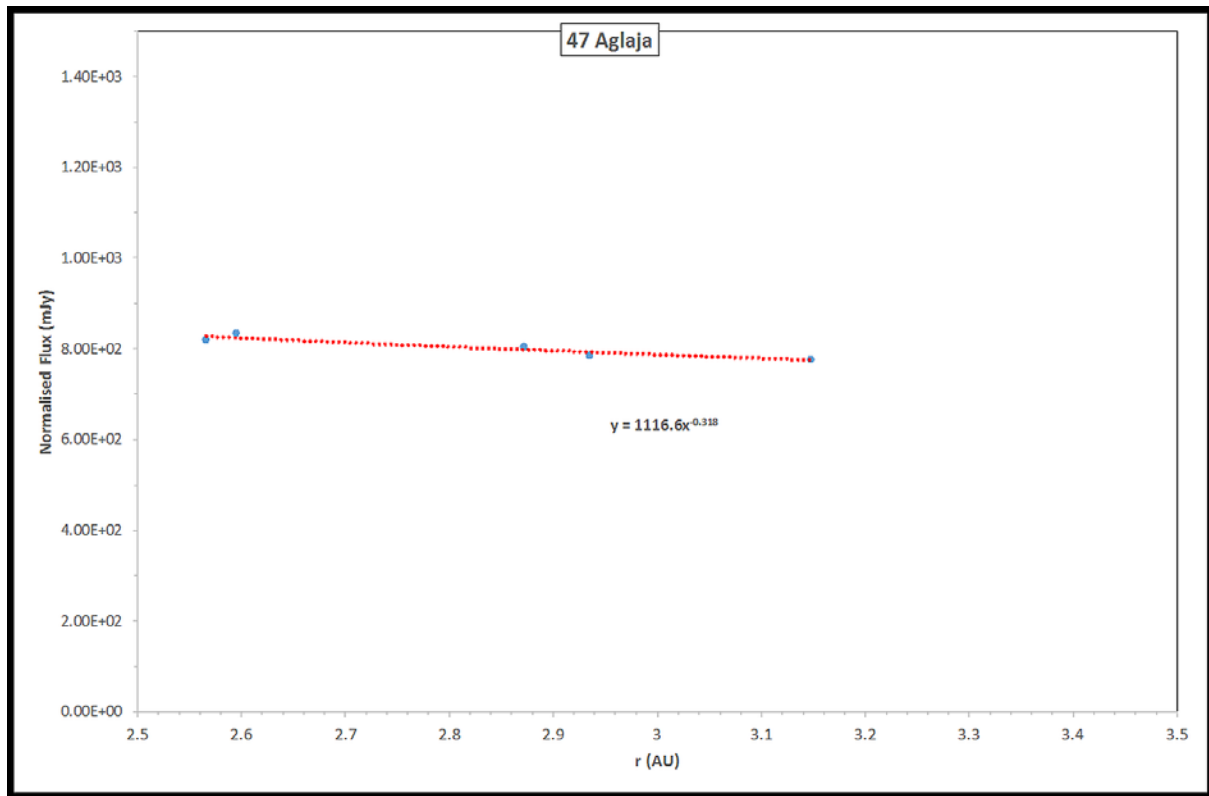


Figure 12: 500 micron flux for 47 Aglaja, corrected for geocentric distance, against heliocentric distance for all SPIRE observations included in this catalogue, along with the power law fit.

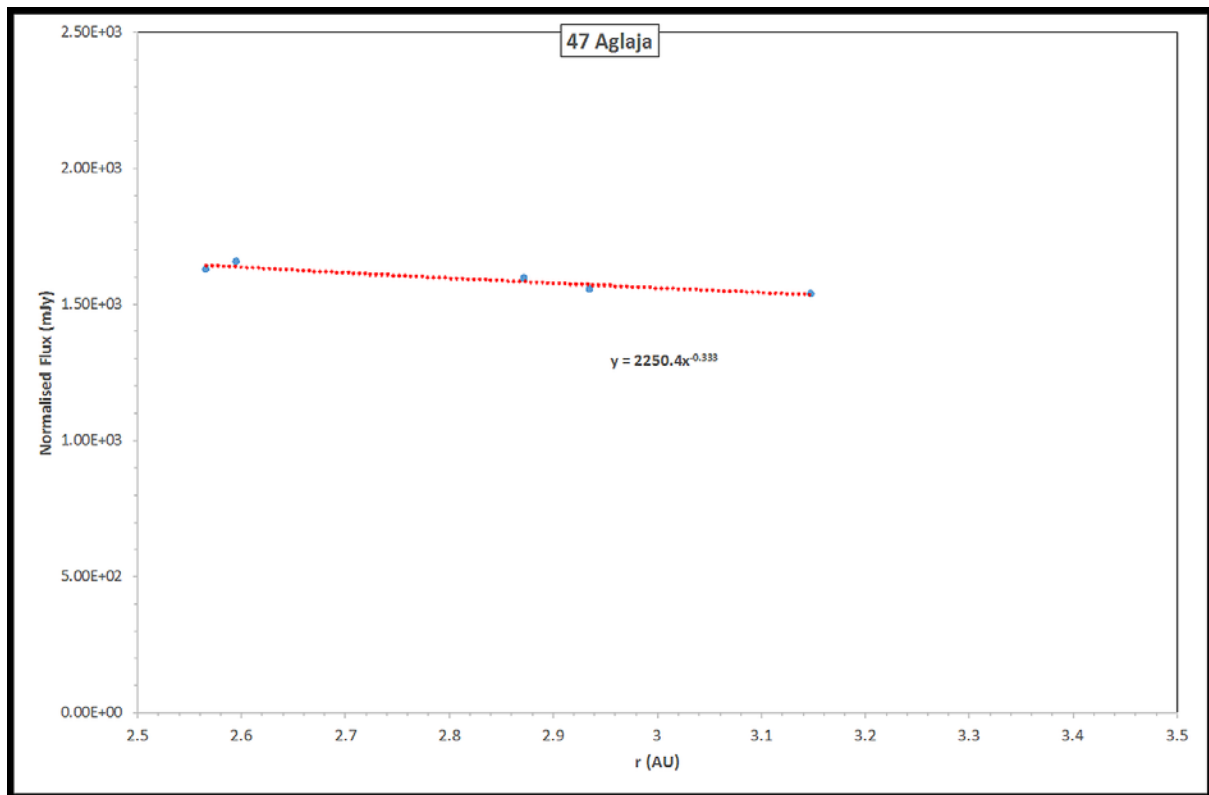


Figure 13: 350 micron flux for 47 Aglaja, corrected for geocentric distance, against heliocentric distance for all SPIRE observations included in this catalogue, along with the power law fit.

observations included in this catalogue, along with the power law fit.

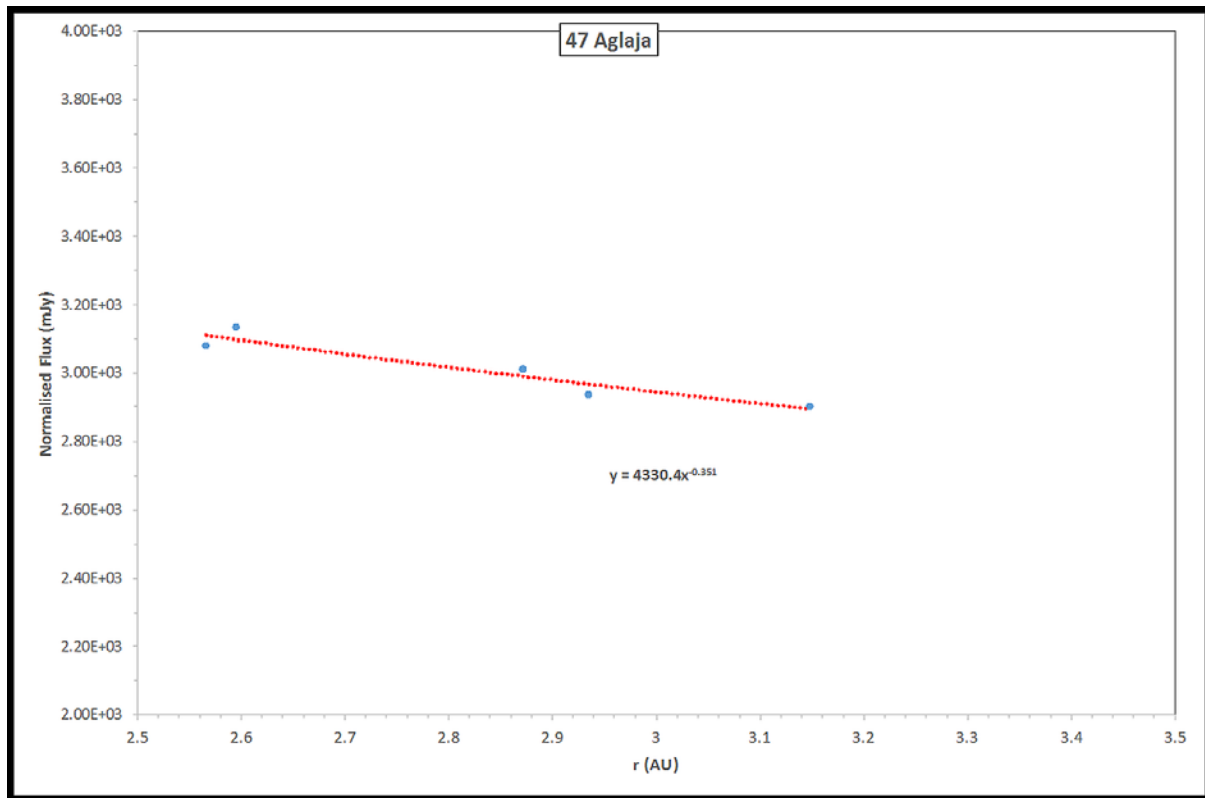


Figure 14: 250 micron flux for 47 Aglaja, corrected for geocentric distance, against heliocentric distance for all SPIRE observations included in this catalogue, along with the power law fit.

10.4.4. Objects that show anomalous behaviour

A small number of objects show anomalous behaviour in the sense that a positive slope of 250-micron flux against heliocentric distance is observed (i.e. higher flux at greater heliocentric distance). These are listed in Table 8, with relevant physical parameters: number, name and provisional designation; NAIF ID; number of measures; slope (b) of the 250-micron Flux (corrected to $\Delta=1$ AU) v heliocentric distance power law ($F=a \cdot r^b$); Correlation coefficient r^2 of power law fit (shown as “1” if there were just two observations); SMASS taxonomic type, where known; absolute magnitude; measured radius in kilometres; albedo; rotation period in hours (if known); UT date of first Herschel observation; heliocentric distance in AU of first Herschel observation; UT date of last Herschel observation; heliocentric distance in AU of last Herschel observation; segment of orbit (“inbound” if approaching perihelion, “outbound” if receding from perihelion).

A typical example of a well-observed asteroid that shows anomalous behaviour is shown for 220 Stephania in Figure 15 (500 microns), Figure 16 (350 microns) and Figure 17 (250 microns). In all three bands the flux is significantly higher at greater heliocentric distance giving a positive slope to the power law fit of flux against heliocentric distance. The behaviour is similar in all three bands, with calculated power law indices of +0.26, +0.32 and +0.31 respectively.

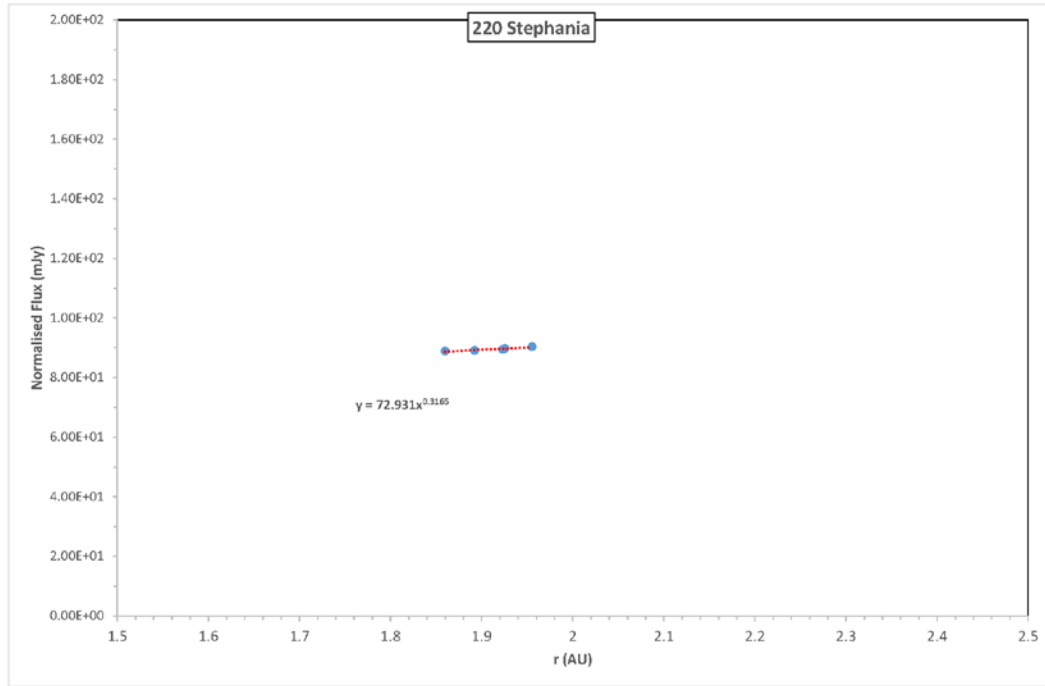


Figure 15: 500 micron flux for 220 Stephania, corrected for geocentric distance, against heliocentric distance for all SPIRE observations included in this catalogue, along with the power law fit and correlation coefficient. We see that the flux increases at increasing heliocentric distance.

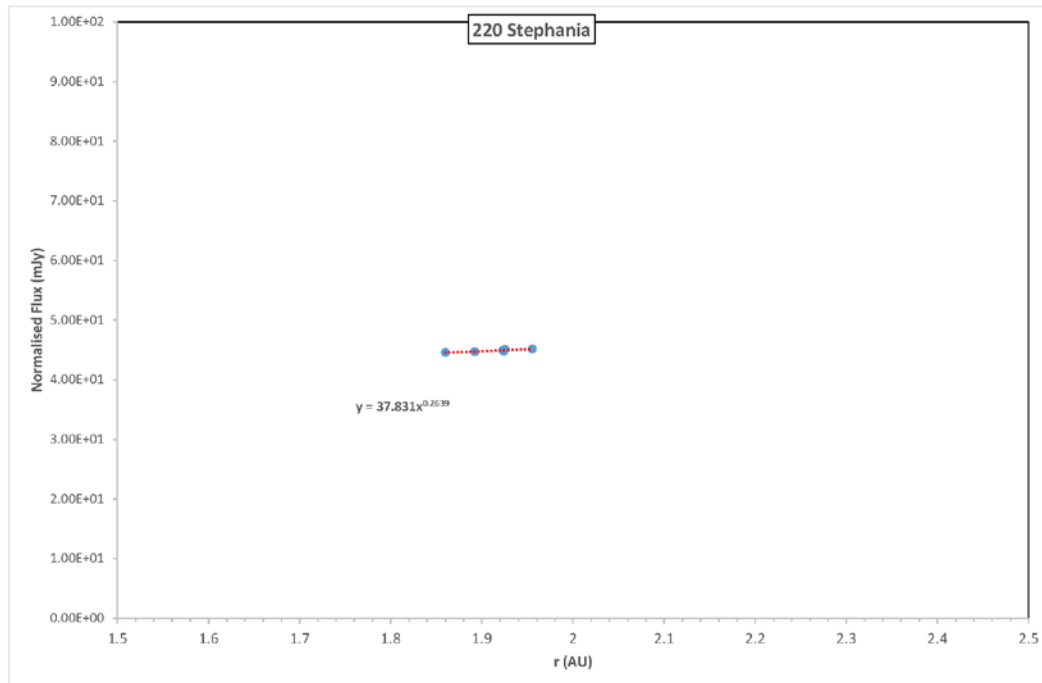


Figure 16: 350 micron flux for 220 Stephania, corrected for geocentric distance, against heliocentric distance for all SPIRE observations included in this catalogue, along with the power law fit and correlation coefficient. We see that the flux increases at increasing heliocentric distance.

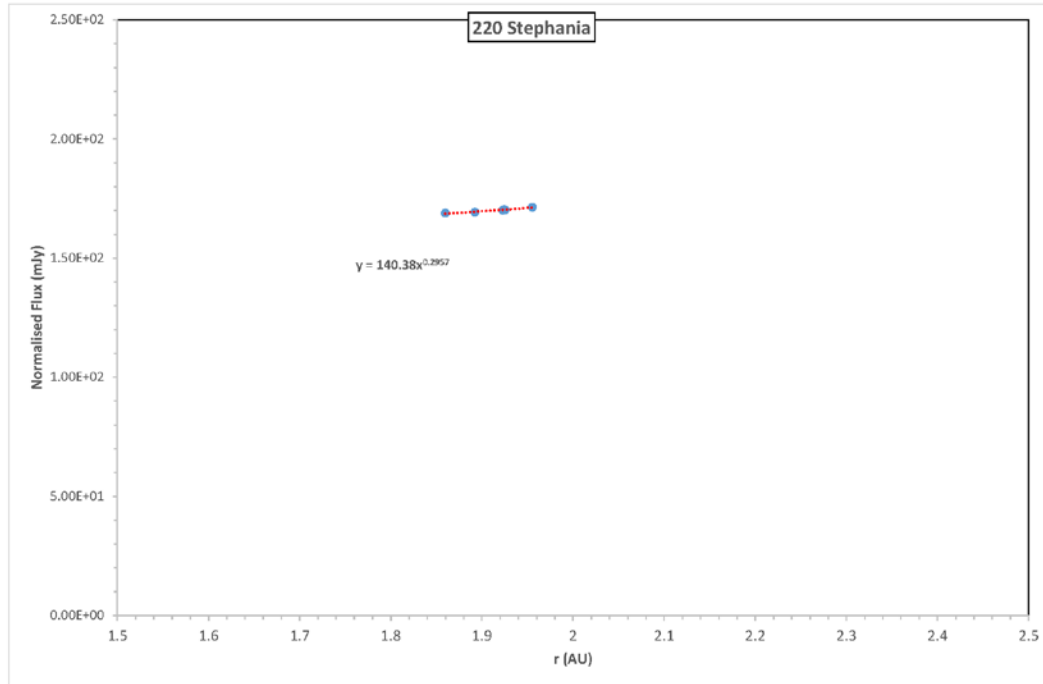


Figure 17: 250 micron flux for 220 Stephania, corrected for geocentric distance, against heliocentric distance for all SPIRE observations included in this catalogue, along with the power law fit and correlation coefficient. We see that the flux increases at increasing heliocentric distance.

Of the objects that show anomalous behaviour, 9 out of 14 (64%) with known taxonomic type are S-type, as against 39% in the complete data set and only 2 out of 14 (14%) are C-type, as against 24% in the full sample, suggesting an over-abundance of S-type and deficit of C-type asteroids among the anomalous objects. However, given the small numbers involved, this may be simply a result of small number statistics.

10.5. Summary of photometry

Table 6 shows a summary of the data for the 1174 objects observed and catalogued in this work.

Target	Dynamical Classification	Max r	Min r	Median r	Median 250	Median 350	Median 500	Sigma 250	Sigma 350	Sigma 500	Points	s/n 250	s/n 350	s/n 500	250/350	350/500	250/500	Taxonomic Type
1 Ceres	Dwarf Planet / Main Belt Asteroid	2.931	2.583	2.756	190620.9	100995.2	50900.2	3065.2	1540.5	745.8	19	62.2	65.6	68.2	1.89	1.98	3.74	C
2 Pallas	Main Belt Asteroid	3.171	2.680	3.003	88417.9	46896.2	23651.0	2345.0	1190.1	580.3	13	37.7	39.4	40.8	1.89	1.98	3.74	B
3 Juno	Main Belt Asteroid	3.325	2.002	3.163	29174.3	15483.0	7811.7	1987.7	997.3	482.0	6	14.7	15.5	16.2	1.88	1.98	3.73	Sk
4 Vesta	Main Belt Asteroid	2.558	2.268	2.503	228381.4	120607.8	60623.0	2120.4	1092.3	541.3	18	107.7	110.4	112.0	1.89	1.99	3.77	V
6 Hebe	Main Belt Asteroid	2.882	2.061	2.816	21395.0	11330.3	5707.4	1545.4	789.3	386.9	11	13.8	14.4	14.8	1.89	1.99	3.75	S
7 Iris	Main Belt Asteroid	2.914	2.494	2.884	25700.6	13616.4	6861.1	579.0	292.4	142.0	5	44.4	46.6	48.3	1.89	1.98	3.75	S
8 Flora	Main Belt Asteroid	2.539	2.305	2.404	11023.0	5820.2	2925.3	181.3	93.4	46.1	7	60.8	62.3	63.5	1.89	1.99	3.77	S
10 Hygiea	Main Belt Asteroid	3.208	2.985	3.068	26743.2	14185.9	7154.8	409.9	207.6	101.1	8	65.3	68.3	70.8	1.89	1.98	3.74	C
11 Parthenope	Main Belt Asteroid	2.290	2.210	2.250	10593.7	5587.4	2806.3	49.0	24.2	11.5	2	216.4	230.8	244.7	1.90	1.99	3.78	Sk
13 Egeria	Main Belt Asteroid	2.603	2.567	2.578	8595.6	4544.4	2286.3	69.4	36.4	18.1	6	123.8	124.9	126.4	1.89	1.99	3.76	Ch
19 Fortuna	Main Belt Asteroid	2.658	2.057	2.063	6324.0	3330.4	1670.9	177.1	88.5	42.7	12	35.7	37.6	39.2	1.90	1.99	3.78	Ch
20 Massalia	Main Belt Asteroid	2.736	2.716	2.723	10385.6	5496.4	2767.2	96.1	50.6	25.6	4	108.1	108.6	108.3	1.89	1.99	3.75	S
21 Lutetia	Main Belt Asteroid	2.738	2.371	2.692	4800.2	2540.3	1278.9	117.9	59.7	28.8	6	40.7	42.6	44.4	1.89	1.99	3.75	Xk
24 Themis	Main Belt Asteroid	3.380	3.342	3.354	5740.7	3050.8	1540.4	60.2	32.1	15.8	6	95.3	95.1	97.8	1.88	1.98	3.73	B
27 Euterpe	Main Belt Asteroid	2.055	2.019	2.036	7214.7	3798.8	1905.5	38.0	19.5	9.7	6	190.1	194.4	195.9	1.90	1.99	3.79	S
29 Amphitrite	Main Belt Asteroid	2.567	2.369	2.547	19472.0	10293.7	5178.7	278.4	140.7	68.3	3	69.9	73.2	75.8	1.89	1.99	3.76	S
34 Circe	Main Belt Asteroid	2.811	2.786	2.799	1623.8	860.1	433.3	6.7	3.4	1.8	6	241.5	250.5	234.3	1.89	1.98	3.75	Ch
35 Leukothea	Main Belt Asteroid	3.234	3.196	3.199	1541.2	818.8	413.2	0.7	0.3	0.2	3	2268.6	2863.3	2353.2	1.88	1.98	3.73	C
37 Fides	Main Belt Asteroid	3.101	2.685	3.030	4846.7	2570.5	1296.3	124.6	63.0	30.7	6	38.9	40.8	42.2	1.89	1.98	3.74	S
40 Harmonia	Main Belt Asteroid	2.372	2.233	2.367	6941.7	3664.3	1841.7	44.1	21.9	10.7	4	157.5	167.3	172.4	1.89	1.99	3.77	S
47 Aglaja	Main Belt Asteroid	3.148	2.566	2.872	3011.6	1595.3	803.6	86.0	43.4	21.0	5	35.0	36.7	38.2	1.89	1.99	3.75	B
48 Doris	Main Belt Asteroid	2.992	2.968	2.975	7078.4	3752.7	1891.5	59.6	31.5	15.9	7	118.8	119.1	119.2	1.89	1.98	3.74	Ch
51 Nemausa	Main Belt Asteroid	2.490	2.490	2.490	4895.6	2586.6	1300.7				1				1.89	1.99	3.76	Ch
52 Europa	Main Belt Asteroid	3.420	2.768	3.347	11625.2	6178.3	3119.8	356.9	178.5	86.1	8	32.6	34.6	36.2	1.88	1.98	3.73	C
54 Alexandra	Main Belt Asteroid	3.241	3.142	3.225	3373.9	1791.8	904.2	8.5	4.2	1.8	4	396.8	431.0	498.4	1.88	1.98	3.73	C

56 Melete	Main Belt Asteroid	2.429	2.015	2.027	2132.3	1122.7	563.3	40.4	19.9	9.5	4	52.7	56.4	59.3	1.90	1.99	3.79	Xk
59 Elpis	Main Belt Asteroid	2.475	2.396	2.466	2889.5	1526.7	767.4	17.9	9.1	4.6	4	161.8	167.3	167.6	1.89	1.99	3.77	B
60 Echo	Main Belt Asteroid	2.556	2.162	2.538	2221.1	1174.3	590.5	52.2	26.0	12.7	4	42.5	45.1	46.6	1.89	1.99	3.76	S
65 Cybele	Main Belt Asteroid	3.722	3.451	3.557	8455.0	4498.0	2274.0	95.9	48.9	23.6	7	88.2	92.0	96.5	1.88	1.98	3.72	Xc
67 Asia	Main Belt Asteroid	2.738	2.738	2.738	2023.6	1071.1	539.3				1				1.89	1.99	3.75	S
70 Panopaea	Main Belt Asteroid	2.824	2.824	2.824	2333.9	1235.9	622.5				1				1.89	1.99	3.75	Ch
71 Niobe	Main Belt Asteroid	2.801	2.767	2.769	4911.8	2601.1	1310.1	1.3	0.7	0.4	3	3743.9	3773.7	3011.7	1.89	1.99	3.75	Xe
72 Feronia	Main Belt Asteroid	2.141	1.995	2.068	1198.7	631.4	316.8	10.8	5.4	2.6	2	110.8	117.5	121.5	1.90	1.99	3.78	TDG
76 Freia	Main Belt Asteroid	3.686	3.662	3.684	2529.3	1346.6	681.8	6.0	3.2	1.3	3	418.7	416.5	537.6	1.88	1.98	3.71	X
79 Eurynome	Main Belt Asteroid	2.292	1.987	2.270	2867.6	1512.6	759.9	56.7	28.4	13.6	4	50.6	53.3	55.9	1.90	1.99	3.77	S
85 Io	Main Belt Asteroid	2.411	2.152	2.152	4076.9	2148.3	1078.3	61.8	30.7	14.6	3	65.9	70.0	73.6	1.90	1.99	3.78	B
87 Sylvia	Main Belt Asteroid	3.623	3.303	3.312	6509.6	3457.8	1746.0	104.8	53.3	25.9	7	62.1	64.8	67.4	1.88	1.98	3.73	X
88 Thisbe	Main Belt Asteroid	3.113	2.671	2.818	6269.9	3319.7	1672.0	466.8	252.2	129.0	6	13.4	13.2	13.0	1.89	1.99	3.75	B
90 Antiope	Main Belt Asteroid	2.809	2.794	2.802	2092.9	1108.2	558.2	14.5	7.8	4.1	2	144.0	142.2	135.7	1.89	1.99	3.75	C
93 Minerva	Main Belt Asteroid	2.909	2.366	2.506	3230.3	1707.0	858.4	98.4	49.5	24.0	4	32.8	34.5	35.8	1.89	1.99	3.76	C
98 Ianthe	Main Belt Asteroid	2.966	2.904	2.924	1187.9	629.6	317.2	10.8	5.6	2.9	5	110.0	111.8	108.4	1.89	1.98	3.75	Ch
100 Hekate	Main Belt Asteroid	3.606	3.606	3.606	3188.8	1697.3	858.0				1				1.88	1.98	3.72	S
102 Miriam	Main Belt Asteroid	1.999	1.999	1.999	958.9	504.6	253.2				1				1.90	1.99	3.79	C
107 Camilla	Main Belt Asteroid	3.462	3.446	3.454	5594.5	2974.9	1503.1	13.1	6.7	3.5	5	425.8	446.9	434.6	1.88	1.98	3.72	X
108 Hecuba	Main Belt Asteroid	3.403	3.403	3.403	2242.0	1192.1	602.0	0.3	0.2	0.1	2	6671.8	7012.7	7012.7	1.88	1.98	3.72	Sl
122 Gerda	Main Belt Asteroid	3.298	3.287	3.290	2791.9	1482.9	748.3	22.8	12.1	5.9	7	122.3	122.7	126.7	1.88	1.98	3.73	L
129 Antigone	Main Belt Asteroid	3.299	3.265	3.283	5812.1	3086.7	1559.0	19.2	10.4	5.1	5	302.9	297.9	303.9	1.88	1.98	3.73	X
142 Polana	Main Belt Asteroid	2.723	2.533	2.547	330.4	174.7	87.8	4.1	1.9	1.0	4	80.7	90.2	91.4	1.89	1.99	3.76	B
145 Adeona	Main Belt Asteroid	2.792	2.758	2.778	2291.9	1213.2	611.2	5.6	3.1	1.5	10	407.6	397.7	394.6	1.89	1.98	3.75	Ch
154 Bertha	Main Belt Asteroid	3.441	3.435	3.438	3538.5	1881.5	950.5	9.1	5.0	2.3	6	388.0	375.0	414.8	1.88	1.98	3.72	C
155 Scylla	Main Belt Asteroid	2.955	2.955	2.955	111.8	59.2	29.9				1				1.89	1.98	3.74	XFC
159 Aemilia	Main Belt Asteroid	3.145	3.115	3.116	2285.5	1213.5	611.8	23.7	12.7	6.1	5	96.5	95.5	100.3	1.88	1.98	3.74	Ch
173 Ino	Main Belt Asteroid	3.311	2.783	2.877	3532.0	1870.3	942.0	106.3	53.8	26.4	7	33.2	34.8	35.7	1.89	1.99	3.75	Xk
184 Dejopeja	Main Belt Asteroid	3.415	3.412	3.412	1841.3	978.2	494.0	13.9	6.9	3.7	5	132.2	141.1	134.9	1.88	1.98	3.73	X
188 Menippe	Main Belt Asteroid	2.631	2.327	2.479	887.5	468.9	235.8	19.2	9.7	4.8	2	46.1	48.2	49.0	1.89	1.99	3.76	S
189 Phthia	Main Belt Asteroid	2.394	2.394	2.394	802.6	423.8	213.0				1				1.89	1.99	3.77	Sa

190 Ismene	Main Belt Asteroid	3.913	3.913	3.913	3343.2	1782.7	903.2					1				1.88	1.97	3.70	X
191 Kolga	Main Belt Asteroid	2.640	2.633	2.635	1010.6	534.3	269.1	10.9	5.6	2.7	6	92.9	95.0	98.4	1.89	1.99	3.76	Cb	
192 Nausikaa	Main Belt Asteroid	1.863	1.821	1.847	6624.5	3482.8	1745.1	38.3	20.5	10.5	5	172.9	169.6	166.1	1.90	2.00	3.80	Sl	
211 Isolda	Main Belt Asteroid	2.808	2.766	2.767	2956.3	1564.6	787.6	34.1	17.6	8.8	5	86.8	88.8	89.6	1.89	1.99	3.75	Ch	
218 Bianca	Main Belt Asteroid	2.962	2.952	2.957	1468.3	778.6	392.4	4.8	2.5	1.4	6	309.0	315.5	276.4	1.89	1.98	3.74	S	
220 Stephania	Main Belt Asteroid	1.955	1.860	1.924	170.2	89.6	44.9	0.8	0.5	0.2	6	208.7	189.2	218.9	1.90	2.00	3.79	XC	
221 Eos	Main Belt Asteroid	3.323	3.323	3.323	3279.8	1742.9	879.8	0.3	0.2	0.3	5	10137.0	7593.5	2591.0	1.88	1.98	3.73	K	
222 Lucia	Main Belt Asteroid	3.376	3.136	3.190	863.5	458.5	231.7	11.6	6.0	2.9	6	74.6	76.6	79.1	1.88	1.98	3.73	BU	
226 Weringia	Main Belt Asteroid	2.462	2.361	2.461	512.3	270.6	136.1	5.7	2.8	1.5	13	90.2	95.7	91.5	1.89	1.99	3.76	S	
227 Philosophia	Main Belt Asteroid	3.706	3.685	3.696	932.4	496.8	251.0	3.1	1.6	0.9	5	297.8	301.6	270.4	1.88	1.98	3.71	-	
231 Vindobona	Main Belt Asteroid	3.153	2.865	3.009	637.9	338.2	170.2	15.0	7.4	3.6	2	42.5	45.9	47.2	1.89	1.99	3.75	-	
232 Russia	Main Belt Asteroid	3.002	2.994	3.000	322.8	171.3	86.1	2.6	1.5	0.9	6	122.3	111.3	92.8	1.88	1.99	3.75	C	
236 Honoria	Main Belt Asteroid	2.348	2.308	2.337	2317.2	1222.9	614.5	10.6	5.5	2.6	4	218.6	221.0	233.7	1.89	1.99	3.77	L	
241 Germania	Main Belt Asteroid	2.818	2.818	2.818	3829.7	2027.9	1021.5	0.0	0.0	0.0	1				1.89	1.99	3.75	B	
271 Penthésilée	Main Belt Asteroid	2.805	2.705	2.797	494.9	261.9	132.3	3.3	1.7	0.8	4	150.3	152.8	172.9	1.89	1.98	3.74	PC	
274 Philagoria	Main Belt Asteroid	3.397	3.274	3.291	420.1	222.9	112.5	3.3	1.7	0.8	5	128.3	132.2	134.6	1.88	1.98	3.74	-	
276 Adelheid	Main Belt Asteroid	3.163	3.136	3.144	1590.1	843.8	425.8	15.7	8.4	4.1	6	101.0	100.8	103.2	1.88	1.98	3.73	X	
277 Elvira	Main Belt Asteroid	2.696	2.631	2.690	478.9	253.3	127.8	3.6	2.0	0.9	4	132.1	126.9	142.9	1.89	1.98	3.75	S	
287 Nephthys	Main Belt Asteroid	2.387	2.339	2.349	2074.6	1095.0	550.3	10.1	5.4	2.7	9	205.1	203.6	206.1	1.89	1.99	3.77	S	
288 Glauke	Main Belt Asteroid	3.334	3.333	3.334	449.1	238.3	120.6	2.3	1.1	0.8	6	193.9	222.1	157.5	1.88	1.98	3.72	S	
292 Ludovica	Main Belt Asteroid	2.495	2.450	2.457	468.5	247.5	124.5	3.2	1.7	0.8	16	145.7	146.7	148.6	1.89	1.99	3.76	-	
295 Theresia	Main Belt Asteroid	2.576	2.576	2.576	363.9	192.2	97.0				1				1.89	1.98	3.75	S	
300 Geraldina	Main Belt Asteroid	3.053	3.047	3.050	526.5	279.3	141.0	0.7	0.6	0.2	5	745.8	489.3	614.3	1.89	1.98	3.74	-	
301 Bavaria	Main Belt Asteroid	2.816	2.793	2.809	345.2	182.5	91.7	1.8	0.8	0.5	6	193.0	239.2	178.7	1.89	1.99	3.76	C	
308 Polyxo	Main Belt Asteroid	2.725	2.715	2.725	2302.2	1218.3	613.5	20.4	10.9	5.5	5	112.6	112.1	111.4	1.89	1.99	3.75	T	
313 Chaldaea	Main Belt Asteroid	2.754	2.476	2.745	1137.3	601.9	303.4	18.8	9.5	4.4	4	60.4	63.6	69.1	1.89	1.98	3.75	C	
315 Constantia	Main Belt Asteroid	1.866	1.866	1.866	47.2	24.9	12.5	0.1	0.1	0.1	2	607.3	169.4	169.4	1.90	2.00	3.79	-	
318 Magdalena	Main Belt Asteroid	3.287	3.129	3.279	736.9	391.5	197.9	6.3	3.0	1.7	4	116.8	129.3	118.6	1.88	1.98	3.72	CXF	
320 Katharina	Main Belt Asteroid	2.667	2.666	2.666	225.7	119.2	59.8	2.1	1.1	0.5	5	105.8	107.4	115.2	1.89	1.99	3.77	-	
338 Budrosa (1892 F)	Main Belt Asteroid	2.866	2.862	2.863	1820.3	964.4	485.9	18.6	10.2	5.1	4	97.9	94.2	96.0	1.89	1.98	3.75	Xk	
339 Dorothea (1892 G)	Main Belt Asteroid	2.731	2.731	2.731	830.6	439.8	221.5				1				1.89	1.99	3.75	K	

342 Endymion (1892 K)	Main Belt Asteroid	2.482	2.428	2.445	358.0	188.9	94.8	4.6	2.3	1.1	6	77.8	82.3	87.0	1.89	1.99	3.78	Ch
351 Yrsa (1892 V)	Main Belt Asteroid	2.742	2.701	2.721	1063.0	562.6	283.2	4.6	2.4	1.3	6	229.7	236.3	225.7	1.89	1.99	3.75	S
359 Georgia (1893 M)	Main Belt Asteroid	2.414	2.310	2.314	1246.4	657.7	330.5	5.6	2.8	1.4	5	224.5	235.0	238.6	1.90	1.99	3.77	X
360 Carlova (1893 N)	Main Belt Asteroid	3.211	3.211	3.211	1580.3	838.4	423.2				1				1.88	1.98	3.73	C
366 Vincentina (1893 W)	Main Belt Asteroid	3.054	2.984	2.987	1445.4	766.5	386.4	5.0	2.5	1.1	4	289.0	304.4	338.2	1.89	1.98	3.74	Ch
372 Palma (1893 AH)	Main Belt Asteroid	2.722	2.407	2.680	4184.7	2214.6	1115.1	79.1	39.5	19.1	3	52.9	56.0	58.3	1.89	1.99	3.75	B
377 Campania (1893 AN)	Main Belt Asteroid	2.623	2.501	2.615	1163.3	615.4	309.4	9.8	5.0	2.6	4	118.4	122.2	120.7	1.89	1.99	3.76	Ch
381 Myrrha (1894 AS)	Main Belt Asteroid	3.326	3.326	3.326	1914.5	1017.0	513.9				1				1.88	1.98	3.73	Cb
382 Dodona (1894 AT)	Main Belt Asteroid	3.511	3.088	3.248	1198.6	636.8	321.6	25.5	13.1	6.7	5	46.9	48.8	48.3	1.88	1.98	3.73	M
388 Charybdis (1894 BA)	Main Belt Asteroid	2.920	2.907	2.914	1523.0	807.1	407.1	5.5	3.0	1.6	5	277.7	271.0	259.2	1.89	1.98	3.74	C
392 Wilhelmina (1894 BF)	Main Belt Asteroid	2.497	2.491	2.494	583.1	308.4	154.8	4.9	2.7	1.6	2	119.6	115.9	98.9	1.89	1.99	3.77	Ch
396 Aeolia (1894 BL)	Main Belt Asteroid	2.766	2.721	2.765	426.1	225.3	113.1	3.3	1.9	0.9	5	129.7	121.4	120.2	1.89	1.99	3.77	Xe
405 Thia (1895 BZ)	Main Belt Asteroid	3.212	3.044	3.128	1633.0	866.5	436.9	25.3	13.2	6.3	2	64.6	65.9	69.3	1.88	1.98	3.74	Ch
431 Nephele (1897 DN)	Main Belt Asteroid	3.667	3.667	3.667	1199.9	639.0	323.4	0.0	0.1	0.3	2	1199.9	639.0	323.4	1.88	1.98	3.71	B
434 Hungaria (1898 DR)	Main Belt Asteroid	1.822	1.822	1.822	155.5	81.8	40.9				1				1.90	2.00	3.80	Xe
438 Zeuxo (1898 DU)	Main Belt Asteroid	2.664	2.531	2.560	505.8	267.4	134.6	3.3	1.7	0.9	13	153.4	159.5	147.1	1.89	1.99	3.76	F:
442 Eichsfeldia (1899 EE)	Main Belt Asteroid	2.484	2.460	2.484	414.1	218.8	110.2	8.1	4.1	2.1	3	50.9	53.2	51.5	1.89	1.99	3.76	Ch
444 Gypsis (1899 EL)	Main Belt Asteroid	2.319	2.301	2.318	3348.3	1766.9	887.7	33.5	17.7	9.1	5	100.1	99.7	98.1	1.89	1.99	3.77	C
451 Patientia (1899 EY)	Main Belt Asteroid	2.862	2.856	2.857	8943.7	4737.3	2387.2	8.8	4.6	2.4	3	1018.3	1024.2	1002.7	1.89	1.98	3.75	CU
453 Tea (1900 FA)	Main Belt Asteroid	2.420	2.417	2.419	299.1	157.9	79.4	0.5	0.2	0.2	5	553.7	844.9	382.9	1.89	1.99	3.77	S
454 Mathesis (1900 FC)	Main Belt Asteroid	2.892	2.739	2.749	856.3	453.3	228.2	4.2	1.9	1.1	4	206.0	243.0	211.4	1.89	1.99	3.75	CB
460 Scania (1900 FN)	Main Belt Asteroid	2.450	2.450	2.450	229.9	121.7	61.2				1				1.89	1.99	3.76	K
462 Eriphyla (1900 FQ)	Main Belt Asteroid	2.679	2.632	2.633	849.1	448.9	225.9	6.5	3.4	1.7	8	131.3	130.7	129.7	1.89	1.99	3.76	S
463 Lola (1900 FS)	Main Belt Asteroid	2.305	2.305	2.305	82.1	43.4	22.0				1				1.89	1.98	3.74	X
465 Alekto (1901 FW)	Main Belt Asteroid	3.557	3.244	3.263	463.0	246.1	123.8	6.9	3.8	1.9	4	67.2	65.2	65.2	1.88	1.99	3.74	-
469 Argentina (1901 GE)	Main Belt Asteroid	3.576	3.576	3.576	1333.5	709.5	358.5				1				1.88	1.98	3.72	X
472 Roma (1901 GP)	Main Belt Asteroid	2.339	2.339	2.339	1197.7	632.0	317.9	0.5	0.2	0.1	3	2415.4	2818.8	2677.6	1.90	1.99	3.77	S
478 Tergeste (1901 GU)	Main Belt Asteroid	2.986	2.965	2.975	2599.0	1377.6	694.9	14.2	7.4	3.8	5	183.4	186.8	183.5	1.89	1.98	3.74	L
484 Pittsburghia (1902 HX)	Main Belt Asteroid	2.519	2.517	2.517	479.5	253.7	127.6	1.2	0.5	0.3	3	402.0	537.3	495.1	1.89	1.99	3.76	S
486 Cremona (1902 JB)	Main Belt Asteroid	2.722	2.701	2.717	168.1	88.7	44.8	1.4	0.7	0.4	5	123.5	119.0	113.6	1.89	1.98	3.75	-
492 Gismonda (1902 JR)	Main Belt Asteroid	2.706	2.586	2.586	460.2	243.4	122.4	2.6	1.2	0.7	5	178.3	199.1	180.5	1.89	1.99	3.76	-

500 Selinur (1903 LA)	Main Belt Asteroid	2.258	2.251	2.251	941.8	496.6	249.6	4.9	2.5	1.2	4	194.0	199.8	211.9	1.90	1.99	3.77	-
506 Marion (1903 LN)	Main Belt Asteroid	3.214	3.190	3.212	1119.3	594.3	300.0	1.1	0.6	0.2	3	1065.0	1059.7	1203.9	1.88	1.98	3.73	XC
508 Princetonia (1903 LQ)	Main Belt Asteroid	3.197	3.187	3.189	1693.6	899.2	453.9	8.5	4.4	2.3	12	198.8	204.3	201.7	1.88	1.98	3.73	C
509 Iolanda (1903 LR)	Main Belt Asteroid	2.786	2.786	2.786	1795.8	950.8	478.8				1				1.89	1.99	3.75	S
511 Davida (1903 LU)	Main Belt Asteroid	3.496	3.159	3.189	12712.5	6747.3	3404.6	181.1	89.9	42.8	3	70.2	75.1	79.5	1.88	1.98	3.73	C
512 Taurinensis (1903 LV)	Mars Crossing Asteroid	2.238	2.238	2.238	237.1	125.1	62.8				1				1.90	1.99	3.78	S
518 Halawe (1903 MO)	Main Belt Asteroid	1.979	1.979	1.979	185.4	97.6	48.8				1				1.90	2.00	3.80	-
520 Franziska (1903 MV)	Main Belt Asteroid	2.942	2.752	2.931	228.7	121.2	60.8	2.8	1.6	0.7	4	81.0	74.1	87.4	1.89	1.99	3.76	CGU
522 Helga (1904 NC)	Main Belt Asteroid	3.368	3.349	3.351	1051.0	558.8	281.8	3.9	1.8	0.9	5	268.0	314.8	317.8	1.88	1.98	3.73	X
525 Adelaide (1908 EKa)	Main Belt Asteroid	2.415	2.210	2.407	42.0	22.2	11.1	0.5	0.2	0.1	4	80.3	110.2	75.2	1.89	2.01	3.80	SU
526 Jena (1904 NQ)	Main Belt Asteroid	3.411	3.385	3.397	331.3	176.0	88.7	3.9	2.1	1.1	3	85.4	82.0	78.8	1.88	1.98	3.73	B
527 Euryanthe (1904 NR)	Main Belt Asteroid	2.336	2.336	2.336	337.6	177.9	89.3				1				1.90	1.99	3.78	Cb
529 Preziosa (1904 NT)	Main Belt Asteroid	2.746	2.733	2.737	397.9	211.0	106.1	3.5	1.9	0.8	6	112.8	108.3	134.8	1.89	1.99	3.75	S
530 Turandot (1904 NV)	Main Belt Asteroid	2.626	2.626	2.626	808.8	427.7	215.4	0.1	0.2	0.0	2	8363.5	2593.2	5585.7	1.89	1.99	3.75	F
531 Zerlina (1904 NW)	Main Belt Asteroid	2.974	2.974	2.974	63.8	33.5	17.1				1				1.91	1.95	3.73	B
532 Herculina (1904 NY)	Main Belt Asteroid	3.253	2.315	2.784	19673.5	10413.4	5243.7	1088.7	542.6	261.4	2	18.1	19.2	20.1	1.89	1.99	3.75	S
537 Pauly (1904 OG)	Main Belt Asteroid	2.848	2.455	2.517	1397.5	738.6	371.5	15.7	7.8	3.9	16	89.1	94.3	96.1	1.89	1.99	3.76	DU:
543 Charlotte (1904 OT)	Main Belt Asteroid	2.625	2.601	2.607	743.1	393.0	198.1	6.9	3.7	1.8	5	107.4	106.7	112.1	1.89	1.98	3.75	Xe
550 Senta (1904 PL)	Main Belt Asteroid	2.069	2.069	2.069	831.4	438.0	219.8				1				1.90	1.99	3.78	S
567 Eleutheria (1905 QP)	Main Belt Asteroid	3.424	3.392	3.406	819.8	436.2	220.4	4.1	2.0	1.3	7	198.9	215.7	168.6	1.88	1.98	3.72	CFB:
575 Renate (1905 RE)	Main Belt Asteroid	2.328	2.314	2.327	238.4	125.5	62.9	1.6	0.8	0.3	3	148.7	165.2	189.5	1.90	2.00	3.79	-
582 Olympia (1906 SO)	Main Belt Asteroid	2.521	2.520	2.520	961.1	508.0	255.5	0.2	0.2	0.2	7	5506.9	2851.4	1437.3	1.89	1.99	3.76	S
583 Klotilde (1905 SP)	Main Belt Asteroid	3.681	3.680	3.681	911.4	485.7	245.5	0.6	0.6	0.2	3	1595.0	802.5	1410.7	1.88	1.98	3.71	C
591 Irmgard (1906 TP)	Main Belt Asteroid	2.677	2.677	2.677	214.1	113.4	57.1				1				1.89	1.99	3.75	X
595 Polyxena (1906 TZ)	Main Belt Asteroid	3.175	3.153	3.168	3015.9	1600.6	807.7	18.8	10.0	5.2	6	160.7	160.3	156.6	1.88	1.98	3.73	-
597 Bandusia (1906 UB)	Main Belt Asteroid	3.053	2.292	2.293	999.6	527.7	265.1	23.8	11.9	5.6	14	42.0	44.3	47.0	1.89	1.99	3.77	S
600 Musa (1906 UM)	Main Belt Asteroid	2.768	2.752	2.763	352.6	186.9	93.9	1.8	0.8	0.6	7	198.4	223.2	168.3	1.89	1.99	3.76	S
601 Nerthus (1906 UN)	Main Belt Asteroid	2.883	2.815	2.815	560.8	296.8	149.7	0.3	0.3	0.2	4	1802.6	1069.0	785.0	1.89	1.98	3.75	C
602 Marianna (1906 TE)	Main Belt Asteroid	2.574	2.574	2.574	2011.3	1063.4	535.1				1				1.89	1.99	3.76	C
607 Jenny (1906 VC)	Main Belt Asteroid	3.065	2.991	3.028	438.8	232.6	117.2	3.5	1.8	1.0	2	123.6	131.2	113.0	1.89	1.98	3.74	-
608 Adolfine (1906 VD)	Main Belt Asteroid	2.657	2.655	2.657	205.6	108.8	54.6	1.2	0.7	0.2	4	173.1	163.2	288.7	1.89	1.99	3.77	-

612 Veronika (1906 VN)	Main Belt Asteroid	2.556	2.556	2.556	221.8	117.1	58.8					1				1.89	1.99	3.77	-
614 Pia (1906 VQ)	Main Belt Asteroid	2.633	2.438	2.621	184.6	97.6	49.4	2.2	1.1	0.5		4	82.9	86.9	102.1	1.89	1.98	3.74	C
616 Elly (1906 VT)	Main Belt Asteroid	2.611	2.611	2.611	229.3	121.4	61.1					1				1.89	1.99	3.75	S
617 Patroclus (1906 VY)	Jupiter Trojan	4.506	4.506	4.506	1779.4	952.2	482.8					1				1.87	1.97	3.69	P
625 Xenia (1907 XN)	Main Belt Asteroid	2.195	2.064	2.129	493.0	259.8	130.4	5.4	2.8	1.3		2	91.8	92.9	100.4	1.90	1.99	3.78	Sa
629 Bernardina (1907 XU)	Main Belt Asteroid	3.267	3.267	3.267	382.9	203.4	103.1					1				1.88	1.97	3.71	X
630 Euphemia (1907 XW)	Main Belt Asteroid	2.781	2.754	2.755	166.4	88.0	44.2	1.1	0.6	0.5		4	152.7	135.9	89.7	1.89	1.99	3.77	-
632 Pyrrha (1907 YX)	Main Belt Asteroid	2.437	2.400	2.402	129.4	68.5	34.2	12.8	6.9	3.6		3	10.1	9.9	9.6	1.89	2.00	3.78	-
637 Chrysothemis (1907 YE)	Main Belt Asteroid	3.453	3.431	3.441	95.8	50.9	25.5	0.5	0.4	0.2		6	189.5	118.5	118.5	1.88	2.00	3.76	-
638 Moira (1907 ZQ)	Main Belt Asteroid	3.039	2.757	2.774	409.0	216.3	109.0	5.3	2.7	1.3		4	76.7	80.3	82.7	1.89	1.98	3.75	Ch
642 Clara (1907 ZY)	Main Belt Asteroid	3.377	3.377	3.377	387.8	205.6	103.8					1				1.89	1.98	3.74	L
643 Scheherezade (1907 ZZ)	Main Belt Asteroid	3.429	3.429	3.429	509.9	270.8	136.8	0.4	0.4	0.4		3	1245.0	698.8	368.3	1.88	1.98	3.73	P
651 Antikleia (1907 AN)	Main Belt Asteroid	2.784	2.756	2.759	406.7	215.4	108.4	1.3	0.5	0.3		7	312.2	430.9	352.2	1.89	1.99	3.75	S
653 Berenike (1907 BK)	Main Belt Asteroid	3.132	3.128	3.130	828.0	439.7	221.9	3.4	1.9	1.1		5	245.3	225.5	204.8	1.88	1.98	3.73	K
656 Beagle (1908 BU)	Main Belt Asteroid	3.571	3.488	3.570	371.7	197.7	100.2	2.1	1.3	0.9		4	179.0	156.7	115.4	1.88	1.97	3.71	-
658 Asteria (1908 BW)	Main Belt Asteroid	2.809	2.702	2.803	248.5	131.9	66.3	1.9	1.0	0.5		4	133.8	135.1	128.0	1.88	1.99	3.75	S
662 Newtonia (1908 CW)	Main Belt Asteroid	2.586	2.585	2.586	322.4	170.5	85.9	0.1	0.1	0.1		2	3277.3	1455.1 17753.	1454.5	1.89	1.99	3.76	-
663 Gerlinde (1908 DG)	Main Belt Asteroid	3.518	3.518	3.518	789.6	419.6	212.0	0.1	0.0	0.3		3	8033.9	5	622.4	1.88	1.98	3.72	X
664 Judith (1908 DH)	Main Belt Asteroid	3.562	3.518	3.531	391.8	208.0	105.7	1.3	0.8	0.7		4	293.6	270.5	156.7	1.88	1.97	3.71	XC
668 Dora (1908 DO)	Main Belt Asteroid	2.334	2.262	2.310	71.7	37.6	18.8	0.5	0.4	0.4		6	130.4	106.7	53.3	1.90	2.00	3.81	Ch
673 Edda (1908 EA)	Main Belt Asteroid	2.836	2.814	2.835	341.3	181.0	91.1	1.5	0.9	0.7		4	235.1	209.8	139.5	1.89	1.99	3.75	S
684 Hildburg (1909 HD)	Main Belt Asteroid	2.428	2.428	2.428	213.5	112.4	57.0					1				1.90	1.97	3.75	-
688 Melanie (1909 HH)	Main Belt Asteroid	2.572	2.518	2.555	250.7	132.4	66.4	1.5	0.8	0.4		6	166.7	174.1	177.4	1.89	1.99	3.78	C
689 Zita (1909 HJ)	Main Belt Asteroid	1.806	1.806	1.806	68.3	35.8	18.1	0.1	0.1	0.0		2	475.6	475.6	475.6	1.91	1.97	3.77	CX:
704 Interamnia (1910 KU)	Main Belt Asteroid	3.380	2.601	2.770	17489.2	9259.9	4664.1	641.9	324.9	158.3		6	27.2	28.5	29.5	1.89	1.99	3.75	B
705 Erminia (1910 KV)	Main Belt Asteroid	2.898	2.898	2.898	1787.5	947.2	477.5					1				1.89	1.98	3.74	C
717 Wisibada (1911 MJ)	Main Belt Asteroid	2.662	2.337	2.500	155.8	82.3	41.6	2.4	1.0	0.5		2	64.1	82.5	78.9	1.89	1.98	3.75	DX:
720 Bohlinia (1911 MW)	Main Belt Asteroid	2.842	2.842	2.842	592.4	313.3	158.3					1				1.89	1.98	3.74	Sq
725 Amanda (1911 ND)	Main Belt Asteroid	2.767	2.767	2.767	78.0	41.3	21.0					1				1.89	1.97	3.72	CSU
731 Sorgia (1912 OQ)	Main Belt Asteroid	2.725	2.585	2.598	594.3	314.4	158.3	3.1	1.7	0.7		12	189.7	190.1	224.3	1.89	1.99	3.75	Xe
733 Mocia (1912 PF)	Main Belt Asteroid	3.607	3.586	3.606	893.5	475.4	240.3	3.7	2.1	1.1		4	243.7	223.2	217.8	1.88	1.98	3.72	CF

738 Alagasta (1913 QO)	Main Belt Asteroid	3.211	3.207	3.207	355.3	188.0	94.9	3.4	1.9	1.1	5	104.8	100.5	90.2	1.89	1.98	3.74	CGSU
740 Cantabria (1913 QS)	Main Belt Asteroid	3.323	3.322	3.322	876.7	466.2	235.2	0.2	0.1	0.1	2	3618.0	3618.0	3618.0	1.88	1.98	3.73	CX
744 Aguntina (1913 QW)	Main Belt Asteroid	3.550	3.492	3.547	306.6	163.2	82.7	1.3	0.7	0.6	12	232.8	225.1	135.6	1.88	1.97	3.70	FX:
748 Simeisa (1913 RD)	Main Belt Asteroid	3.773	3.728	3.750	922.3	490.7	247.8	10.9	5.5	3.0	3	84.8	89.3	82.1	1.88	1.98	3.72	P
749 Malzovia (1913 RF)	Main Belt Asteroid	2.446	2.446	2.446	84.4	44.3	22.6				1				1.91	1.96	3.74	S
752 Sulamitis (1913 RL)	Main Belt Asteroid	2.421	2.389	2.399	362.2	191.0	96.0	2.1	1.1	0.6	7	169.2	174.0	168.8	1.90	1.99	3.77	-
758 Mancunia (1912 PE)	Main Belt Asteroid	2.801	2.765	2.776	2269.4	1201.5	605.2	18.6	9.8	4.9	6	122.2	122.8	123.8	1.89	1.99	3.75	X
762 Pulcova (1913 SQ)	Main Belt Asteroid	3.009	3.009	3.009	1965.5	1042.4	525.7				1				1.89	1.98	3.74	F
767 Bondia (1913 SX)	Main Belt Asteroid	2.617	2.617	2.617	420.7	222.4	111.9				1				1.89	1.99	3.76	B
770 Bali (1913 TE)	Main Belt Asteroid	2.252	1.960	2.106	196.8	103.7	52.0	3.6	1.8	0.9	2	54.3	57.2	56.9	1.90	1.99	3.78	S
771 Libera (1913 TO)	Main Belt Asteroid	2.172	2.172	2.172	284.6	150.1	75.4				1				1.90	1.99	3.78	X
775 Lumiere (1914 TX)	Main Belt Asteroid	3.004	2.975	2.984	338.9	179.7	90.7	3.1	1.7	1.0	5	109.1	107.2	95.5	1.89	1.98	3.74	S
779 Nina (1914 UB)	Main Belt Asteroid	2.070	2.070	2.070	3147.8	1657.7	831.6				1				1.90	1.99	3.79	X
786 Bredichina (1914 UO)	Main Belt Asteroid	3.651	3.525	3.536	1290.5	686.6	347.2	3.0	1.5	0.8	6	431.5	443.6	430.5	1.88	1.98	3.72	C
787 Moskva (1914 UQ)	Main Belt Asteroid	2.397	2.218	2.221	578.7	305.2	153.3	4.1	2.0	0.9	4	140.7	154.1	164.7	1.90	1.99	3.78	-
793 Arizona (1907 ZD)	Main Belt Asteroid	2.475	2.475	2.475	351.7	185.9	93.4				1				1.89	1.99	3.77	S
807 Cerkaskia (1915 WY)	Main Belt Asteroid	3.032	3.023	3.032	237.0	125.8	63.3	0.4	0.1	0.0	5	526.9	1357.1	1430.6	1.88	1.99	3.74	S
813 Baumeia (1915 YR)	Main Belt Asteroid	2.180	2.175	2.177	112.0	59.1	29.7	0.2	0.2	0.1	6	555.9	305.3	364.9	1.90	1.99	3.77	-
816 Juliana (1916 YV)	Main Belt Asteroid	3.331	3.331	3.331	264.8	140.5	71.5				1				1.88	1.96	3.70	-
820 Adriana (1916 ZB)	Main Belt Asteroid	3.045	2.981	2.983	275.3	145.8	73.3	0.1	0.2	0.2	4	4014.7	637.3	322.5	1.89	1.99	3.75	-
824 Anastasia (1916 ZH)	Main Belt Asteroid	2.899	2.866	2.883	280.5	148.9	74.9	0.8	0.4	0.2	6	350.5	375.4	363.7	1.88	1.99	3.75	L
826 Henrika (1916 ZO)	Main Belt Asteroid	2.924	2.850	2.902	103.2	54.7	27.6	0.5	0.2	0.2	6	194.0	243.8	138.3	1.89	1.98	3.74	C
827 Wolfiana (1916 ZW)	Main Belt Asteroid	2.034	1.927	1.981	26.5	13.9	7.0	0.1	0.0	0.1	2	203.3	376.3	75.9	1.91	1.98	3.78	-
834 Burnhamia (1916 AD)	Main Belt Asteroid	3.386	2.994	3.190	695.8	369.6	186.2	21.4	11.3	5.4	2	32.5	32.6	34.4	1.88	1.98	3.74	GS:
845 Naema (1916 AS)	Main Belt Asteroid	2.770	2.761	2.769	389.2	205.9	103.4	4.7	2.4	1.4	3	83.4	85.5	74.3	1.89	1.99	3.76	C
850 Altona (1916 S24)	Main Belt Asteroid	3.126	3.126	3.126	585.1	310.6	156.5				1				1.88	1.98	3.74	-
852 Wladilena (1916 S27)	Main Belt Asteroid	2.203	2.078	2.164	494.2	260.4	130.9	1.0	0.7	0.3	6	492.4	374.6	506.9	1.90	1.99	3.78	Ch
853 Nansenia (1916 S28)	Main Belt Asteroid	2.525	2.346	2.435	93.7	49.4	24.9	1.6	0.6	0.5	2	57.5	76.1	50.2	1.90	1.99	3.77	Ch
855 Newcambia (1916 ZP)	Main Belt Asteroid	2.517	2.468	2.505	91.9	48.5	24.4	1.0	0.5	0.1	4	93.4	100.7	170.9	1.89	1.99	3.76	-
858 El Djezair (1916 a)	Main Belt Asteroid	2.970	2.946	2.969	343.0	181.7	91.2	2.4	1.4	0.6	5	142.6	132.2	163.7	1.89	1.99	3.76	S
867 Kovacia (1917 BS)	Main Belt Asteroid	3.138	3.089	3.104	110.6	58.4	29.5	1.3	0.7	0.5	6	82.2	89.5	62.6	1.89	1.98	3.76	-

868 Lova (1917 BU)	Main Belt Asteroid	2.579	2.335	2.563	343.6	181.7	91.6	5.8	2.9	1.3	4	59.5	62.8	68.2	1.89	1.98	3.75	Ch
876 Scott (1917 CH)	Main Belt Asteroid	2.712	2.685	2.686	182.5	96.6	48.8	0.8	0.4	0.2	12	239.2	232.2	222.3	1.89	1.98	3.74	S
884 Priamus (1917 CQ)	Jupiter Trojan	5.013	5.001	5.007	969.0	518.8	264.6	4.2	2.6	2.2	2	233.3	201.0	119.9	1.87	1.96	3.66	D
886 Washingtonia (1917 b)	Main Belt Asteroid	3.964	3.964	3.964	689.3	367.9	185.8				1				1.87	1.98	3.71	C
889 Erynia (1918 DG)	Main Belt Asteroid	2.185	2.061	2.094	195.5	103.0	51.7	0.9	0.5	0.2	12	213.4	199.4	231.1	1.90	1.99	3.78	-
903 Nealley (1918 EM)	Main Belt Asteroid	3.118	3.118	3.118	392.1	207.9	104.8	0.3	0.2	0.1	3	1344.2	1202.1	1202.1	1.89	1.98	3.74	-
904 Rockefelleria (1918 EO)	Main Belt Asteroid	2.822	2.804	2.812	311.7	165.0	82.9	0.9	0.6	0.3	6	334.9	264.9	310.7	1.89	1.99	3.76	-
906 Repsolda (1918 ET)	Main Belt Asteroid	2.689	2.688	2.688	823.8	436.1	219.5	0.1	0.1	0.1	2	6761.0	3273.7	3436.4	1.89	1.99	3.75	-
907 Rhoda (1918 EU)	Main Belt Asteroid	2.978	2.936	2.938	512.8	271.8	137.2	5.0	2.8	1.6	4	103.3	98.8	84.2	1.89	1.98	3.74	Xk
908 Buda (1918 EX)	Main Belt Asteroid	2.341	2.302	2.321	233.0	122.7	61.9	1.5	0.8	0.4	5	159.3	151.0	147.2	1.90	1.98	3.77	L
910 Anneliese (1919 FB)	Main Belt Asteroid	3.085	3.046	3.084	280.1	148.7	74.8	1.4	1.1	0.5	5	207.3	138.5	144.3	1.88	1.99	3.74	Ch
923 Herluga (1919 GB)	Main Belt Asteroid	2.377	2.105	2.357	108.9	57.5	28.7	1.9	0.9	0.4	4	58.4	64.0	64.0	1.89	2.00	3.79	-
928 Hildrun (1920 GP)	Main Belt Asteroid	3.555	3.523	3.530	408.6	217.4	109.6	1.8	1.2	0.8	6	221.8	182.4	133.4	1.88	1.98	3.73	-
932 Hooveria (1920 GV)	Main Belt Asteroid	2.372	2.217	2.332	435.5	229.7	115.5	4.6	2.4	1.2	10	94.0	97.3	97.4	1.90	1.99	3.77	CB
939 Isberga (1920 HR)	Main Belt Asteroid	2.616	2.616	2.616	58.5	30.8	15.4				1				1.90	2.00	3.80	S
946 Poesia (1921 JC)	Main Belt Asteroid	3.438	3.438	3.438	257.3	136.7	69.3				1				1.88	1.97	3.71	FU
949 Hel (1921 JK)	Main Belt Asteroid	3.478	3.478	3.478	503.5	267.6	135.2				1				1.88	1.98	3.72	-
956 Elisa (1921 JW)	Main Belt Asteroid	2.558	2.558	2.558	62.4	33.2	16.6				1				1.88	2.00	3.76	-
957 Camelia (1921 JX)	Main Belt Asteroid	2.752	2.752	2.752	496.5	263.1	132.2				1				1.89	1.99	3.76	-
960 Birgit (1921 KH)	Main Belt Asteroid	2.041	1.879	1.885	50.7	26.7	13.3	0.1	0.1	0.1	4	338.6	256.0	129.8	1.90	2.00	3.80	-
963 Iduberga (1921 KR)	Main Belt Asteroid	2.165	2.088	2.089	45.2	23.8	11.9	0.3	0.3	0.1	7	142.3	84.0	233.0	1.90	2.00	3.81	S
970 Primula (1921 LB)	Main Belt Asteroid	1.870	1.863	1.865	61.2	32.2	16.2	0.1	0.1	0.1	4	599.0	402.4	162.8	1.90	1.98	3.77	S
973 Aralia (1922 LR)	Main Belt Asteroid	3.176	2.977	3.165	393.3	208.8	105.3	4.0	2.1	1.0	4	98.0	98.5	108.1	1.88	1.98	3.73	Xk
977 Philippa (1922 LV)	Main Belt Asteroid	3.204	3.183	3.203	527.6	279.9	141.1	1.6	1.0	0.3	3	322.8	271.7	467.4	1.88	1.98	3.74	C
980 Anacostia (1921 W19)	Main Belt Asteroid	2.213	2.213	2.213	3244.2	1710.7	858.9				1				1.90	1.99	3.78	L
986 Amelia (1922 MQ)	Main Belt Asteroid	2.607	2.591	2.606	805.6	426.1	214.4	0.3	0.2	0.1	3	2555.0	2694.2	1734.7	1.89	1.99	3.76	-
987 Wallia (1922 MR)	Main Belt Asteroid	2.580	2.519	2.560	685.1	362.3	182.4	4.2	2.1	1.1	6	162.1	175.7	163.7	1.89	1.99	3.76	-
991 McDonalda (1922 NB)	Main Belt Asteroid	2.976	2.940	2.958	144.9	76.9	38.8	0.5	0.2	0.3	6	321.3	394.5	152.4	1.89	1.98	3.73	C:
992 Swasey (1922 ND)	Main Belt Asteroid	3.297	3.295	3.296	246.8	131.1	66.3	1.7	0.8	0.7	6	148.0	159.0	98.4	1.88	1.98	3.72	-
999 Zachia (1923 NW)	Main Belt Asteroid	2.054	2.054	2.054	221.0	116.5	58.5				1				1.90	1.99	3.78	-
1007 Pawlowia (1923 OX)	Main Belt Asteroid	2.494	2.410	2.486	142.0	74.8	37.6	1.1	0.6	0.4	4	134.1	132.1	107.1	1.90	1.99	3.78	K

1019 Strackea (1924 QN)	Main Belt Asteroid	2.696	1.816	1.977	41.2	21.6	11.0	1.8	1.1	0.6	3	22.4	19.2	17.3	1.90	1.97	3.75	S
1026 Ingrid (1923 NY)	Main Belt Asteroid	2.065	2.010	2.063	38.4	20.2	10.3	0.2	0.1	0.1	5	175.6	148.9	89.2	1.90	1.96	3.74	-
1027 Aesculapia (A923 YO11)	Main Belt Asteroid	3.564	3.512	3.564	178.5	95.0	47.9	0.8	0.7	0.5	4	218.8	145.9	105.1	1.88	1.98	3.72	-
1029 La Plata (1924 RK)	Main Belt Asteroid	2.960	2.960	2.960	178.6	94.8	47.8	0.3	0.0	0.0	2	623.7	3571.7	3571.7	1.88	1.99	3.74	S
1039 Sonneberga (1924 TL)	Main Belt Asteroid	2.844	2.843	2.844	115.0	60.9	30.7	1.3	0.7	0.2	4	85.8	86.6	191.9	1.89	1.98	3.75	X
1044 Teutonia (1924 RO)	Main Belt Asteroid	2.382	2.382	2.382	234.8	123.9	62.3				1				1.90	1.99	3.77	-
1046 Edwin (1924 UA)	Main Belt Asteroid	2.803	2.796	2.799	236.8	125.3	63.2	0.7	0.3	0.2	6	325.5	400.9	340.6	1.89	1.98	3.75	Xe
1047 Geisha (1924 TE)	Main Belt Asteroid	1.835	1.811	1.825	85.4	44.8	22.4	0.7	0.4	0.2	6	121.5	127.5	108.9	1.90	2.00	3.82	S
1049 Gotho (1925 RB)	Main Belt Asteroid	2.863	2.863	2.863	281.5	149.0	75.4				1				1.89	1.98	3.73	-
1051 Merope (1925 SA)	Main Belt Asteroid	2.969	2.969	2.969	363.6	192.6	97.1	0.0	0.2	0.1	2	11653.9	1000.0	1000.0	1.89	1.98	3.74	-
1056 Azalea (1924 QD)	Main Belt Asteroid	1.865	1.865	1.865	110.1	57.8	29.1				1				1.91	1.98	3.78	S
1059 Mussorgskia (1925 OA)	Main Belt Asteroid	2.470	2.470	2.470	215.3	114.0	57.0				1				1.89	2.00	3.78	-
1073 Gellivara (1923 OW)	Main Belt Asteroid	3.179	3.179	3.179	81.8	42.9	21.9	0.0	0.0	0.0	3	6198.8	6198.8	6198.8	1.91	1.96	3.74	-
1077 Campanula (1926 TK)	Main Belt Asteroid	2.031	1.993	2.012	60.3	31.8	15.9	0.1	0.1	0.1	5	466.9	357.1	242.1	1.90	2.00	3.79	-
1078 Mentha (1926 XB)	Main Belt Asteroid	2.360	2.300	2.319	84.3	44.4	22.3	0.8	0.5	0.3	6	99.8	84.6	87.1	1.90	1.99	3.79	S
1085 Amaryllis (1927 QH)	Main Belt Asteroid	3.231	3.143	3.148	515.2	273.2	138.1	2.6	1.1	0.8	4	194.9	253.5	175.1	1.89	1.98	3.73	-
1087 Arabis (1927 RD)	Main Belt Asteroid	2.744	2.736	2.739	531.8	281.3	141.9	1.7	0.8	0.4	6	321.4	349.3	356.1	1.89	1.98	3.75	S
1088 Mitaka (1927 WA)	Main Belt Asteroid	1.803	1.803	1.803	135.9	71.6	35.8				1				1.90	2.00	3.79	S
1095 Tulipa (1926 GS)	Main Belt Asteroid	3.098	3.086	3.098	268.8	142.1	71.6	1.1	0.4	0.3	4	245.9	383.4	206.6	1.89	1.98	3.75	-
1098 Hakone (1928 RJ)	Main Belt Asteroid	2.539	2.517	2.537	325.0	171.8	86.3	1.3	0.8	0.5	3	252.5	215.3	160.8	1.89	1.99	3.77	Xe
1100 Arnica (1928 SD)	Main Belt Asteroid	2.731	2.731	2.731	185.5	98.2	49.1				1				1.89	2.00	3.78	-
1105 Fragaria (1929 AB)	Main Belt Asteroid	2.814	2.793	2.804	379.6	201.1	101.4	0.8	0.5	0.2	6	497.5	437.8	495.7	1.89	1.98	3.74	ST
1107 Lictoria (1929 FB)	Main Belt Asteroid	3.200	3.167	3.175	633.5	335.9	169.2	7.0	3.8	1.8	4	90.1	89.4	94.9	1.89	1.99	3.74	Xc
1111 Reinmuthia (1927 CO)	Main Belt Asteroid	2.769	2.705	2.763	220.8	116.9	58.8	1.4	0.9	0.3	4	154.4	123.3 11152.	178.0 11152.	1.89	1.99	3.76	FXU:
1112 Polonia (1928 PE)	Main Belt Asteroid	3.296	3.296	3.296	370.3	197.0	99.7	0.0	0.0	0.0	5	11152.9	9	9	1.88	1.98	3.71	S
1119 Euboea (1927 UB)	Main Belt Asteroid	2.538	2.492	2.536	145.1	76.6	38.5	1.2	0.5	0.4	5	125.3	144.6	106.6	1.89	1.99	3.77	-
1123 Shapleva (1928 ST)	Main Belt Asteroid	1.887	1.887	1.887	106.7	56.0	28.2				1				1.90	1.99	3.78	-
1125 China (1957 UN1)	Main Belt Asteroid	3.593	3.593	3.593	85.5	45.2	22.6				1				1.89	2.00	3.78	-
1127 Mimi (1929 AJ)	Main Belt Asteroid	1.907	1.907	1.907	193.4	101.5	51.0	0.0	0.0	0.1	2	174732. 8	4185.2	528.6	1.91	1.99	3.79	CX
1137 Raissa (1929 WB)	Main Belt Asteroid	2.194	2.190	2.191	254.8	134.3	67.5	2.4	1.3	0.6	8	105.8	101.6	113.9	1.90	1.99	3.77	-
1138 Attica (1929 WF)	Main Belt Asteroid	3.026	3.015	3.025	119.7	63.5	32.2	0.4	0.1	0.2	3	295.8	482.4	137.3	1.89	1.97	3.72	-

1142 Aetolia (1930 BC)	Main Belt Asteroid	3.431	3.331	3.381	322.0	170.7	86.7	4.5	1.9	1.0	2	71.9	90.7	86.3	1.89	1.97	3.71	-
1151 Ithaka (1929 RK)	Main Belt Asteroid	1.885	1.823	1.868	26.9	14.2	7.1	0.1	0.1	0.1	6	305.1	161.2	69.0	1.89	2.01	3.81	-
1152 Pawona (1930 AD)	Main Belt Asteroid	2.529	2.529	2.529	175.7	93.0	46.5	1.4	0.8	0.4	3	127.6	124.0	124.0	1.89	2.00	3.78	SI
1153 Wallenbergia (1924 SL)	Main Belt Asteroid	1.881	1.865	1.866	74.5	39.0	19.5	0.5	0.2	0.1	3	141.8	242.9	141.0	1.91	2.00	3.82	-
1162 Larissa (1930 AC)	Main Belt Asteroid	3.833	3.814	3.816	604.1	322.0	162.4	0.4	0.5	0.1	3	1477.2	600.9	1969.8	1.88	1.98	3.72	P
1173 Anchises (1930 UB)	Jupiter Trojan	4.689	4.596	4.599	921.9	493.5	250.6	2.6	1.4	0.3	4	353.7	362.2	881.3	1.87	1.97	3.68	P
1178 Irmela (1931 EC)	Main Belt Asteroid	3.168	3.049	3.162	73.6	39.3	19.8	0.5	0.3	0.3	3	139.0	118.1	73.3	1.87	1.98	3.71	-
1183 Jutta (1930 DC)	Main Belt Asteroid	2.645	2.423	2.437	51.3	27.0	13.5	0.4	0.4	0.2	4	137.6	76.6	76.6	1.90	2.00	3.80	-
1188 Gothlandia (1930 SB)	Main Belt Asteroid	1.868	1.849	1.850	116.7	61.5	30.7	0.2	0.1	0.1	3	634.8	600.9	340.0	1.90	2.00	3.80	S
1191 Alfaterna (1931 CA)	Main Belt Asteroid	3.024	3.020	3.020	210.0	111.1	56.1	1.2	0.4	0.4	3	175.6	275.2	144.4	1.89	1.98	3.74	-
1194 Aletta (1931 JG)	Main Belt Asteroid	3.172	3.166	3.167	224.2	119.3	60.1	0.5	0.3	0.2	3	449.7	345.7	309.8	1.88	1.98	3.73	-
1197 Rhodesia (1931 LD)	Main Belt Asteroid	3.394	3.377	3.393	350.0	186.1	94.4	1.5	0.7	0.5	4	237.8	257.0	191.1	1.88	1.97	3.71	-
1200 Imperatrix (1931 RH)	Main Belt Asteroid	3.159	2.763	3.139	192.5	101.8	51.5	1.8	1.1	0.5	4	105.1	96.5	106.3	1.89	1.98	3.74	-
1218 Aster (1932 BJ)	Main Belt Asteroid	2.253	2.253	2.253	25.8	13.5	6.9				1				1.91	1.96	3.74	-
1224 Fantasia (1927 SD)	Main Belt Asteroid	1.872	1.872	1.872	132.8	69.8	35.0				1				1.90	1.99	3.79	S
1237 Genevieve (1931 XB)	Main Belt Asteroid	2.738	2.738	2.738	217.3	114.9	57.8				1				1.89	1.99	3.76	-
1244 Deira (1932 KE)	Main Belt Asteroid	2.523	2.523	2.523	118.3	62.3	31.6				1				1.90	1.97	3.74	-
1245 Calvinia (1932 KF)	Main Belt Asteroid	2.706	2.666	2.667	458.9	243.0	122.4	5.0	2.7	1.4	4	91.1	90.7	86.9	1.89	1.98	3.75	S
1249 Rutherfordia (1932 VB)	Main Belt Asteroid	2.281	2.270	2.271	111.0	58.3	29.5	0.9	0.3	0.5	3	119.3	193.8	63.9	1.90	1.98	3.76	S
1251 Hedera (1933 BE)	Main Belt Asteroid	2.300	2.297	2.298	277.5	146.4	73.7	3.8	1.9	1.1	4	73.0	76.8	69.3	1.90	1.99	3.76	X
1255 Schilowa (1932 NC)	Main Belt Asteroid	2.628	2.611	2.622	322.4	170.5	85.6	1.5	0.8	0.6	6	211.2	208.8	142.6	1.89	1.99	3.77	-
1258 Sicilia (1932 PG)	Main Belt Asteroid	3.079	3.066	3.078	228.9	121.4	61.1	1.1	0.6	0.3	4	210.9	193.8	236.3	1.89	1.99	3.75	-
1259 Ogyalla (1933 BT)	Main Belt Asteroid	3.445	3.271	3.292	241.6	128.8	65.0	2.5	1.2	0.6	5	96.6	108.9	107.1	1.88	1.98	3.72	-
1260 Walhalla (1933 BW)	Main Belt Asteroid	2.544	2.544	2.544	46.9	25.0	12.5				1				1.88	2.00	3.75	-
1267 Geertruida (1930 HD)	Main Belt Asteroid	2.318	2.048	2.183	70.6	37.3	18.7	1.4	0.7	0.3	2	49.8	55.4	55.4	1.89	2.00	3.79	-
1268 Libya (1930 HJ)	Main Belt Asteroid	4.130	4.108	4.113	797.8	426.1	215.6	7.8	4.1	2.4	4	102.8	105.0	91.4	1.87	1.98	3.70	P
1281 Jeanne (1933 QJ)	Main Belt Asteroid	2.742	2.692	2.718	105.0	55.6	28.1	0.1	0.1	0.2	5	963.0	579.3	156.7	1.89	1.98	3.74	-
1283 Komsomolia (1925 SC)	Main Belt Asteroid	2.535	2.510	2.515	303.2	160.4	80.7	3.7	2.0	1.1	4	82.7	82.2	72.7	1.89	1.99	3.76	-
1285 Julietta (1933 QF)	Main Belt Asteroid	2.835	2.834	2.834	196.3	103.9	52.4	0.4	0.4	0.2	5	438.3	259.0	282.6	1.89	1.98	3.74	-
1286 Banachiewiczza (1933 QH)	Main Belt Asteroid	2.956	2.809	2.815	182.0	96.5	48.3	1.8	0.9	0.5	4	98.5	104.5	97.2	1.89	2.00	3.77	S
1294 Antwerpia (1933 UB1)	Main Belt Asteroid	3.003	2.074	2.385	249.9	131.8	66.3	12.8	6.5	3.2	3	19.5	20.4	20.6	1.90	1.99	3.77	CX

1299 Mertona (1934 BA)	Main Belt Asteroid	2.765	2.399	2.745	113.4	60.1	30.4	2.5	1.2	0.7	4	45.3	51.7	42.2	1.89	1.98	3.73	-
1302 Werra (1924 SV)	Main Belt Asteroid	3.234	2.899	3.218	185.3	98.7	49.9	3.8	1.9	0.9	4	49.0	52.9	54.8	1.88	1.98	3.72	-
1303 Luthera (1928 FP)	Main Belt Asteroid	3.546	3.546	3.546	660.1	351.1	177.7	0.4	0.5	0.4	3	1796.9	666.0	505.3	1.88	1.98	3.71	-
1307 Cimmeria (1930 UF)	Main Belt Asteroid	2.065	2.057	2.061	57.1	30.1	15.1	0.1	0.0	0.1	4	579.0	777.5	159.6	1.90	2.00	3.79	S
1309 Hyperborea (1931 TO)	Main Belt Asteroid	3.079	3.038	3.039	308.9	163.6	82.6	3.2	1.7	0.8	5	95.9	98.8	99.0	1.89	1.98	3.74	-
1310 Villigera (1932 DB)	Mars Crossing Asteroid	2.462	2.388	2.457	112.7	59.8	30.0	0.2	0.2	0.1	3	570.1	262.5	247.2	1.89	1.99	3.76	S
1313 Berna (1933 QG)	Main Belt Asteroid	2.103	2.101	2.102	104.5	55.3	27.7	0.6	0.3	0.2	4	185.5	189.4	148.9	1.89	2.00	3.77	-
1318 Nerina (1934 FG)	Main Belt Asteroid	2.578	2.578	2.578	55.1	29.4	14.9				1				1.88	1.97	3.69	-
1324 Knysna (1934 LL)	Main Belt Asteroid	2.319	1.957	1.974	31.7	16.6	8.3	0.6	0.3	0.2	4	50.8	48.3	40.6	1.91	1.99	3.80	Sq
1325 Inanda (1934 NR)	Main Belt Asteroid	2.009	1.942	1.986	67.3	35.4	17.7	0.5	0.3	0.1	6	134.5	104.0	124.2	1.90	2.00	3.79	-
1331 Solvejg (1933 QS)	Main Belt Asteroid	3.680	3.680	3.680	323.7	171.7	86.5				1				1.89	1.98	3.74	B
1332 Marconia (1934 AA)	Main Belt Asteroid	2.728	2.685	2.722	259.6	137.4	69.3	1.1	0.7	0.4	4	226.8	199.5	164.9	1.89	1.98	3.75	Ld
1335 Demoulina (1934 RE)	Main Belt Asteroid	1.910	1.895	1.903	36.1	18.9	9.4	0.4	0.3	0.0	6	101.9	63.1	232.9	1.91	2.00	3.82	-
1336 Zeelandia (1934 RW)	Main Belt Asteroid	2.768	2.747	2.761	229.9	121.4	61.0	2.2	1.3	0.6	6	103.6	96.8	97.4	1.89	1.99	3.77	S
1338 Duponta (1934 XA)	Main Belt Asteroid	2.303	2.067	2.290	40.1	21.3	10.8	0.6	0.4	0.2	4	63.5	56.3	54.5	1.89	1.97	3.72	-
1339 Desagneauxa (1934 XB)	Main Belt Asteroid	3.067	2.957	3.061	209.5	111.3	55.9	1.5	0.9	0.3	4	138.2	126.7	205.0	1.88	1.99	3.75	S
1340 Yvette (1934 YA)	Main Belt Asteroid	3.436	3.436	3.436	139.7	74.1	37.1				1				1.88	2.00	3.77	-
1346 Gotha (1929 CY)	Main Belt Asteroid	2.561	2.561	2.561	133.5	70.6	35.5				1				1.89	1.99	3.76	-
1350 Rosselia (1934 TA)	Main Belt Asteroid	2.605	2.603	2.604	208.9	110.3	55.3	1.7	1.1	0.6	7	124.8	104.1	88.9	1.89	2.00	3.78	Sa
1356 Nyanza (1935 JH)	Main Belt Asteroid	2.976	2.970	2.975	331.3	175.4	88.8	0.4	0.2	0.2	3	884.9	941.1	585.6	1.89	1.97	3.73	-
1361 Leuschneria (1935 QA)	Main Belt Asteroid	2.798	2.774	2.797	181.3	96.2	48.3	0.8	0.4	0.2	4	224.2	214.6	196.9	1.89	1.99	3.75	-
1364 Safara (1935 VB)	Main Belt Asteroid	2.803	2.803	2.803	214.4	113.8	56.9				1				1.88	2.00	3.77	-
1368 Numidia (1935 HD)	Main Belt Asteroid	2.519	2.410	2.464	182.9	96.9	48.6	0.7	0.2	0.0	2	264.3	482.2	1055.6	1.89	1.99	3.76	-
1369 Ostanina (1935 QB)	Main Belt Asteroid	2.884	2.535	2.548	243.6	128.9	64.6	4.7	2.4	1.1	4	51.7	53.7	57.9	1.89	1.99	3.77	-
1375 Alfreda (1935 UB)	Main Belt Asteroid	2.402	2.402	2.402	137.1	72.3	36.1				1				1.90	2.00	3.80	-
1377 Roberbaxa (1936 CD)	Main Belt Asteroid	2.336	2.336	2.336	32.8	17.1	8.5				1				1.92	2.00	3.84	-
1390 Abastumani (1935 TA)	Main Belt Asteroid	3.336	3.336	3.336	683.6	362.9	182.8	7.0	3.9	1.6	3	97.2	91.9	117.0	1.88	1.98	3.74	P
1391 Carelia (1936 DA)	Main Belt Asteroid	2.951	2.943	2.943	60.0	31.5	16.1	0.2	0.1	0.1	3	265.9	343.4	270.8	1.91	1.95	3.73	S
1397 Umtata (1936 PG)	Main Belt Asteroid	2.682	2.577	2.650	110.3	58.4	29.5	0.3	0.2	0.2	6	320.5	296.3	131.1	1.89	1.98	3.74	-
1399 Teneriffa (1936 QY)	Main Belt Asteroid	1.854	1.854	1.854	18.5	9.7	4.8				1				1.92	2.00	3.83	-
1401 Lavonne (1935 UD)	Main Belt Asteroid	2.624	2.624	2.624	52.8	27.8	14.1	0.1	0.1	0.0	8	402.7	441.3	441.3	1.90	1.97	3.73	S

1403 Idelsonia (1936 QA)	Main Belt Asteroid	1.962	1.962	1.962	115.7	61.1	30.5				1				1.89	2.00	3.79	Cgh
1406 Komppa (1936 RF)	Main Belt Asteroid	2.500	2.490	2.491	132.7	69.9	35.1	0.8	0.6	0.1	3	166.1	124.1	427.9	1.90	1.99	3.78	Ld
1408 Trusanda (1936 WF)	Main Belt Asteroid	2.924	2.833	2.917	133.4	71.0	35.8	0.9	0.3	0.2	4	145.4	279.0	170.3	1.88	1.98	3.72	-
1412 Lagrula (1937 BA)	Main Belt Asteroid	2.105	2.072	2.073	56.2	29.5	14.7	0.8	0.4	0.0	5	70.5	78.1	366.4	1.91	2.01	3.83	-
1415 Malautra (1937 EA)	Main Belt Asteroid	2.409	2.401	2.409	59.3	31.1	15.9	0.7	0.3	0.3	5	79.5	89.8 33238.	48.1 33238.	1.91	1.95	3.73	S
1427 Ruvuma (1937 KB)	Main Belt Asteroid	2.292	2.292	2.292	158.3	83.5	41.9	0.0	0.0	0.0	2	33238.5	5	5	1.90	1.99	3.78	C
1430 Somalia (1937 NK)	Main Belt Asteroid	2.323	2.245	2.298	64.6	34.0	17.0	0.5	0.1	0.2	6	118.8	253.6	104.0	1.90	2.00	3.79	-
1434 Margot (1936 FD1)	Main Belt Asteroid	2.944	2.929	2.937	277.3	146.9	74.5	2.5	1.6	1.1	3	110.6	92.2	68.8	1.89	1.97	3.72	S
1449 Virtanen (1938 DO)	Main Belt Asteroid	2.473	2.205	2.270	69.4	36.7	18.5	0.7	0.4	0.2	14	99.0	87.5	87.1	1.89	1.98	3.75	S
1450 Raimonda (1938 DP)	Main Belt Asteroid	2.738	2.382	2.721	54.7	28.9	14.6	1.2	0.6	0.3	4	47.2	52.2	50.9	1.89	1.98	3.75	-
1453 Fennia (1938 ED1)	Main Belt Asteroid	1.897	1.879	1.895	45.8	24.1	12.1	0.4	0.3	0.1	12	119.9	92.3	99.0	1.90	1.99	3.79	S
1456 Saldanha (1937 NG)	Main Belt Asteroid	2.563	2.550	2.562	178.3	94.0	47.5	0.4	0.2	0.1	3	493.4	601.5	469.6	1.90	1.98	3.75	C:
1464 Armisticia (1939 VO)	Main Belt Asteroid	3.105	3.095	3.095	161.4	85.4	42.7	1.7	1.1	0.3	3	94.0	80.0	137.6	1.89	2.00	3.78	-
1466 Mundleria (1938 KA)	Main Belt Asteroid	2.700	2.447	2.512	61.3	32.4	16.2	0.8	0.3	0.3	8	78.7	105.6	56.6	1.89	2.00	3.78	-
1470 Carla (1938 SD)	Main Belt Asteroid	3.005	2.991	3.000	162.2	86.1	43.3	1.3	0.8	0.5	6	129.6	106.0	95.7	1.88	1.99	3.75	-
1474 Beira (1935 QY)	Mars Crossing Asteroid	2.049	2.049	2.049	39.0	20.6	10.2				1				1.89	2.02	3.83	B
1476 Cox (1936 RA)	Main Belt Asteroid	1.864	1.863	1.864	30.1	15.8	7.9	0.0	0.1	0.0	2	655.5	186.2	186.2	1.91	2.00	3.82	-
1483 Hakoila (1938 DJ1)	Main Belt Asteroid	3.106	3.105	3.106	74.6	39.4	19.7	0.1	0.0	0.0	2	914.0	914.0	914.0	1.89	2.00	3.78	Sq
1484 Postrema (1938 HC)	Main Belt Asteroid	3.299	3.190	3.244	186.3	99.2	50.1	1.9	1.0	0.6	2	98.9	101.6	89.5	1.88	1.98	3.72	B
1485 Isa (1938 OB)	Main Belt Asteroid	2.752	2.693	2.695	86.5	45.9	22.9	0.4	0.1	0.2	4	206.9	625.2	116.8	1.89	2.00	3.77	-
1488 Aura (1938 XE)	Main Belt Asteroid	2.978	2.931	2.946	338.8	179.5	90.5	2.7	1.6	1.0	6	125.7	109.3	91.1	1.89	1.98	3.75	-
1495 Helsinki (1938 SW)	Main Belt Asteroid	2.799	2.763	2.782	113.9	60.2	30.3	0.2	0.2	0.3	4	643.2	269.6	107.9	1.89	1.99	3.76	-
1497 Tampere (1938 SB1)	Main Belt Asteroid	2.795	2.685	2.740	116.0	61.5	30.9	1.3	0.8	0.3	2	87.7	76.1	112.6	1.89	1.99	3.76	-
1499 Pori (1938 UF)	Main Belt Asteroid	2.443	2.187	2.197	132.9	70.3	35.3	1.7	0.8	0.3	3	77.9	87.4	105.0	1.89	1.99	3.77	-
1501 Baade (1938 UJ)	Main Belt Asteroid	1.941	1.929	1.934	80.6	42.4	21.2	0.5	0.3	0.1	6	158.8	153.2	141.5	1.90	2.00	3.80	-
1504 Lappeenranta (1939 FM)	Main Belt Asteroid	2.652	2.618	2.618	76.1	40.3	20.1	0.9	0.5	0.2	3	88.1	85.3	85.3	1.89	2.00	3.78	S
1510 Charlois (1939 DC)	Main Belt Asteroid	2.713	2.694	2.712	105.0	55.6	27.8	0.4	0.2	0.2	4	251.9	234.7	114.2	1.89	2.00	3.77	C
1512 Oulu (1939 FE)	Main Belt Asteroid	4.268	4.041	4.090	495.5	264.6	134.6	5.2	2.4	1.7	5	94.5	108.1	81.2	1.87	1.97	3.68	P
1516 Henry (1938 BG)	Main Belt Asteroid	3.044	3.043	3.043	68.5	36.8	18.0	0.1	0.0	0.0	3	1249.8	1249.8	1249.8	1.86	2.05	3.81	-
1517 Beograd (1938 FD)	Main Belt Asteroid	2.678	2.678	2.678	158.2	84.0	42.0				1				1.88	2.00	3.77	X
1523 Pieksamaki (1939 BC)	Main Belt Asteroid	2.364	2.329	2.340	52.8	27.7	13.9	0.5	0.3	0.2	6	108.9	86.8	86.8	1.91	2.00	3.81	-

1527 Malmquista (1939 UG)	Main Belt Asteroid	2.034	1.788	1.790	80.6	42.4	21.1	0.6	0.4	0.1	4	141.0	119.3	373.5	1.90	2.00	3.81	-
1532 Inari (1938 SM)	Main Belt Asteroid	2.959	2.939	2.945	213.9	113.3	57.4	1.6	1.1	0.3	5	136.2	105.0	171.6	1.89	1.97	3.73	S
1536 Pielinen (1939 SE)	Main Belt Asteroid	1.872	1.871	1.871	38.7	20.4	10.3	0.1	0.0	0.0	2	544.1	1003.7	260.8	1.90	1.99	3.78	-
1539 Borrelly (1940 UB)	Main Belt Asteroid	3.601	3.601	3.601	134.8	71.2	36.9				1				1.89	1.93	3.66	B
1542 Schalen (1941 QE)	Main Belt Asteroid	2.796	2.756	2.790	260.8	137.7	69.7	1.3	0.6	0.3	4	195.6	237.8	259.7	1.89	1.97	3.74	D
1548 Palomaa (1935 FK)	Main Belt Asteroid	3.006	3.006	3.006	103.0	55.0	27.5				1				1.88	2.00	3.75	Xk
1551 Argelander (1938 DC1)	Main Belt Asteroid	2.403	2.403	2.403	62.7	33.5	16.4				1				1.87	2.04	3.81	-
1553 Bauersfelda (1940 AD)	Main Belt Asteroid	3.159	3.018	3.154	98.2	52.0	26.5	0.8	0.4	0.4	4	120.8	119.0	74.1	1.89	1.96	3.70	S
1554 Yugoslavia (1940 RE)	Main Belt Asteroid	2.154	2.154	2.154	147.8	78.0	39.2				1				1.89	1.99	3.77	-
1560 Strattonia (1942 XB)	Main Belt Asteroid	2.357	2.113	2.321	99.9	52.8	26.4	1.7	0.9	0.4	3	59.9	60.4	73.0	1.89	2.00	3.78	C
1561 Fricke (1941 CG)	Main Belt Asteroid	3.193	3.176	3.185	120.9	63.9	32.3	0.5	0.1	0.3	2	262.0	700.8	126.3	1.89	1.98	3.75	-
1579 Herrick (1948 SB)	Main Belt Asteroid	3.417	3.369	3.384	207.3	110.2	55.4	2.1	1.1	0.6	6	99.0	97.7	88.9	1.88	1.99	3.74	F
1587 Kahrstedt (1933 FS1)	Main Belt Asteroid	2.724	2.407	2.710	150.2	79.5	40.2	3.1	1.5	0.7	4	48.5	51.9	59.3	1.89	1.98	3.74	Sa
1593 Fagnes (1951 LB)	Mars Crossing Asteroid	2.061	2.011	2.036	26.2	13.8	7.0	0.2	0.1	0.1	2	171.2	193.6	133.5	1.90	1.97	3.75	S
1598 Paloque (1950 CA)	Main Belt Asteroid	2.320	2.303	2.304	36.0	19.1	9.6	0.1	0.1	0.1	3	329.9	207.4	129.1	1.88	1.99	3.75	-
1599 Giomus (1950 WA)	Main Belt Asteroid	3.150	2.677	2.677	166.6	88.0	44.2	4.4	2.1	1.0	5	37.7	41.5	42.9	1.89	1.99	3.77	-
1604 Tombaugh (1931 FH)	Main Belt Asteroid	2.732	2.732	2.732	289.6	153.3	77.1				1				1.89	1.99	3.76	Xc
1605 Milankovitch (1936 GA)	Main Belt Asteroid	2.995	2.985	2.990	343.5	181.8	91.7	3.2	1.7	0.6	2	108.4	104.3	147.4	1.89	1.98	3.74	-
1606 Jekhovsky (1950 RH)	Main Belt Asteroid	1.852	1.847	1.852	63.1	33.2	16.5	0.2	0.1	0.0	3	274.0	265.2	365.3	1.90	2.01	3.82	C
1607 Mavis (1950 RA)	Main Belt Asteroid	1.893	1.815	1.866	142.3	74.9	37.5	0.7	0.4	0.3	5	207.4	192.1	144.6	1.90	2.00	3.80	-
1614 Goldschmidt (1952 HA)	Main Belt Asteroid	3.134	3.111	3.119	210.5	111.6	56.2	1.9	1.1	0.6	5	111.0	99.2	89.2	1.89	1.99	3.75	-
1617 Alschmitt (1952 FB)	Main Belt Asteroid	3.583	3.583	3.583	177.6	94.4	47.2	0.0	0.0	0.0	2	3826.7	3826.7	3826.7	1.88	2.00	3.76	-
1618 Dawn (1948 NF)	Main Belt Asteroid	2.903	2.836	2.847	147.1	78.0	39.1	1.1	0.6	0.4	11	129.0	139.3	94.8	1.89	1.99	3.76	S
1628 Strobel (1923 OG)	Main Belt Asteroid	3.121	2.996	3.115	388.7	206.7	103.9	2.6	1.3	0.4	4	149.6	155.0	250.5	1.88	1.99	3.74	-
1632 Siebohme (1941 DF)	Main Belt Asteroid	2.395	2.298	2.346	90.9	47.8	23.9	0.4	0.3	0.1	2	210.9	188.2	188.2	1.90	2.00	3.80	-
1637 Swings (1936 QO)	Main Belt Asteroid	3.130	3.119	3.129	279.8	148.0	74.3	2.6	1.1	0.6	5	106.0	130.5	131.6	1.89	1.99	3.76	-
1648 Shajna (1935 RF)	Main Belt Asteroid	2.430	1.974	2.067	43.3	22.8	11.4	0.8	0.4	0.2	9	55.0	54.7	51.1	1.90	2.00	3.80	S
1651 Behrens (1936 HD)	Main Belt Asteroid	2.279	2.256	2.264	63.8	33.7	17.0	0.3	0.2	0.2	7	208.9	149.1	95.5	1.89	1.99	3.76	-
1655 Comas Sola (1929 WG)	Main Belt Asteroid	2.826	2.826	2.826	156.6	83.0	42.1				1				1.89	1.97	3.72	B
1666 van Gent (1930 OG)	Main Belt Asteroid	1.960	1.933	1.946	46.0	24.2	12.2	0.1	0.1	0.1	4	406.9	263.4	169.2	1.90	1.99	3.78	-
1667 Pels (1930 SY)	Main Belt Asteroid	2.249	2.179	2.228	86.6	45.7	22.8	0.7	0.5	0.3	6	119.7	97.2	78.1	1.89	2.00	3.79	Sa

1669 Dagmar (1934 RS)	Main Belt Asteroid	3.494	2.819	2.819	166.0	88.1	44.1	5.6	2.9	1.4	13	29.4	30.3	31.3	1.88	2.00	3.77	G:
1678 Hveen (1940 YH)	Main Belt Asteroid	3.344	3.147	3.335	184.3	97.8	49.6	1.8	0.9	0.6	4	103.4	103.1	86.1	1.88	1.97	3.72	-
1680 Per Brahe (1942 CH)	Main Belt Asteroid	3.100	3.053	3.086	159.8	84.8	42.7	0.7	0.5	0.4	6	240.6	158.3	95.2	1.88	1.98	3.74	S
1684 Iguassu (1951 QE)	Main Belt Asteroid	3.260	3.218	3.247	173.1	91.7	46.5	1.4	0.5	0.3	6	122.2	178.9	149.4	1.89	1.97	3.72	-
1690 Mayrhofer (1948 VB)	Main Belt Asteroid	2.743	2.741	2.741	166.3	88.1	44.4	0.9	0.6	0.4	6	193.3	137.5	104.2	1.89	1.99	3.75	-
1692 Subbotina (1936 QD)	Main Belt Asteroid	2.626	2.626	2.626	141.0	74.5	37.6				1				1.89	1.98	3.75	Cg
1694 Kaiser (1934 SB)	Main Belt Asteroid	1.879	1.801	1.813	120.8	63.5	31.8	0.3	0.1	0.1	16	435.3	439.3	334.0	1.90	2.00	3.80	GC
1713 Bancelhon (1951 SC)	Main Belt Asteroid	2.107	2.107	2.107	23.6	12.3	6.3				1				1.92	1.95	3.74	-
1717 Arlon (1954 AC)	Main Belt Asteroid	2.009	1.980	1.993	60.2	31.7	15.8	0.2	0.2	0.2	5	264.9	152.5	81.8	1.90	2.00	3.80	S
1720 Niels (1935 CQ)	Main Belt Asteroid	2.009	1.982	1.990	38.0	20.0	10.1	0.2	0.1	0.1	7	172.1	213.5	111.3	1.90	1.99	3.77	-
1723 Klemola (1936 FX)	Main Belt Asteroid	3.133	3.075	3.123	370.4	196.6	99.3	3.1	1.7	0.9	12	118.8	112.4	108.5	1.88	1.98	3.73	S
1733 Silke (1938 DL1)	Main Belt Asteroid	2.134	2.098	2.109	34.3	18.0	9.1	0.3	0.1	0.1	7	118.1	121.9	75.6	1.90	1.97	3.75	-
1734 Zhongolovich (1928 TJ)	Main Belt Asteroid	2.139	2.136	2.139	97.5	51.3	25.8	0.6	0.4	0.3	4	167.5	145.6	98.9	1.90	1.98	3.77	Ch
1751 Herget (1955 OC)	Main Belt Asteroid	2.303	2.302	2.303	78.7	41.6	20.8	0.5	0.3	0.2	3	145.2	136.0	136.0	1.89	2.00	3.78	S
1755 Lorbach (1936 VD)	Main Belt Asteroid	3.127	3.127	3.127	192.8	101.9	51.4				1				1.89	1.98	3.75	S
1758 Naantali (1942 DK)	Main Belt Asteroid	3.097	3.049	3.052	143.5	76.3	38.4	0.7	0.4	0.2	4	192.6	175.6	193.7	1.88	1.99	3.73	-
1759 Kienle (1942 RF)	Main Belt Asteroid	1.911	1.858	1.897	25.5	13.4	6.8	0.1	0.1	0.1	6	341.7	152.4	81.9	1.90	1.98	3.77	-
1761 Edmondson (1952 FN)	Main Belt Asteroid	3.229	3.166	3.168	82.2	44.1	22.1	0.7	0.6	0.3	5	120.6	71.3	75.9	1.86	1.99	3.71	-
1762 Russell (1953 TZ)	Main Belt Asteroid	2.719	2.719	2.719	154.2	81.2	41.1				1				1.90	1.98	3.76	-
1763 Williams (1953 TN2)	Main Belt Asteroid	1.839	1.817	1.838	40.5	21.4	10.7	0.2	0.2	0.0	3	231.7	87.7	341.6	1.89	2.00	3.78	-
1764 Cogshall (1953 VM1)	Main Belt Asteroid	3.376	3.183	3.194	117.2	62.2	31.1	1.0	0.6	0.3	4	112.4	110.9	110.9	1.88	2.00	3.77	-
1766 Slipher (1962 RF)	Main Belt Asteroid	2.553	2.520	2.548	55.4	29.6	14.8	0.4	0.3	0.1	4	133.3	104.0	104.0	1.88	2.00	3.75	C
1768 Appenzella (1965 SA)	Main Belt Asteroid	2.020	2.010	2.014	38.1	20.0	10.0	0.2	0.1	0.1	6	175.1	173.4	131.1	1.90	2.01	3.81	C
1769 Carlostorres (1966 QP)	Main Belt Asteroid	1.950	1.950	1.950	20.0	10.5	5.4				1				1.90	1.95	3.71	-
1773 Rumpelstilz (1968 HE)	Main Belt Asteroid	2.709	2.692	2.701	79.5	42.1	21.1	0.2	0.2	0.2	6	329.2	194.6	109.3	1.89	2.00	3.77	-
1776 Kuiper (2520 P-L)	Main Belt Asteroid	3.128	3.128	3.128	129.1	68.9	34.4	0.1	0.0	0.0	4	1430.1	1430.1	1430.1	1.88	2.00	3.75	-
1777 Gehrels (4007 P-L)	Main Belt Asteroid	2.624	2.616	2.619	106.9	56.3	28.3	0.8	0.4	0.3	7	134.3	126.9	107.0	1.90	1.99	3.77	Sq
1780 Kippes (A906 RA)	Main Belt Asteroid	3.114	3.109	3.110	211.8	112.4	57.2	0.4	0.1	0.3	3	486.8	1062.0	188.5	1.88	1.97	3.70	-
1783 Albitskij (1935 FJ)	Main Belt Asteroid	2.685	2.665	2.684	72.7	38.2	19.2	0.0	0.1	0.1	3	1662.2	329.1	178.7	1.90	1.99	3.78	Ch
1786 Raahe (1948 TL)	Main Belt Asteroid	2.726	2.713	2.719	181.8	96.2	48.5	0.5	0.4	0.2	6	368.4	269.1	266.2	1.89	1.98	3.75	-
1787 Chiny (1950 SK)	Main Belt Asteroid	3.061	3.052	3.053	119.1	63.1	31.9	0.3	0.3	0.3	3	434.4	203.5	117.1	1.89	1.98	3.74	-

1790 Volkov (1967 ER)	Main Belt Asteroid	2.445	2.302	2.435	47.2	24.8	12.4	0.7	0.5	0.3	3	65.9	53.5	40.3	1.90	2.00	3.80	-
1795 Woltjer (4010 P-L)	Main Belt Asteroid	2.855	2.802	2.853	72.4	38.4	19.5	0.5	0.4	0.2	5	160.6	97.6	78.0	1.88	1.97	3.72	Ch
1796 Riga (1966 KB)	Main Belt Asteroid	3.555	3.553	3.555	436.3	231.9	117.1	1.9	0.9	0.6	6	231.1	260.7	194.0	1.88	1.98	3.73	Cb
1798 Watts (1949 GC)	Main Belt Asteroid	2.175	1.960	2.068	31.5	16.6	8.2	0.5	0.2	0.2	2	66.4	89.6	51.5	1.89	2.02	3.82	S
1802 Zhang Heng (1964 TW1)	Main Belt Asteroid	2.843	2.773	2.828	93.1	49.3	25.0	0.9	0.4	0.1	7	104.7	111.5	168.8	1.89	1.97	3.73	-
1805 Dirikis (1970 GD)	Main Belt Asteroid	3.399	3.380	3.390	116.0	61.9	31.6	0.6	0.6	0.6	6	192.8	109.4	56.1	1.87	1.96	3.68	-
1806 Derice (1971 LC)	Main Belt Asteroid	2.407	2.191	2.399	68.2	35.9	18.1	1.0	0.5	0.2	4	67.4	71.1	74.3	1.90	1.99	3.77	-
1812 Gilgamesh (4645 P-L)	Main Belt Asteroid	3.084	2.925	3.077	98.7	52.7	26.8	1.3	0.6	0.2	4	76.2	83.0	163.6	1.87	1.97	3.69	-
1820 Lohmann (1949 PO)	Main Belt Asteroid	1.998	1.998	1.998	24.1	12.6	6.4				1				1.91	1.96	3.74	-
1823 Gliese (1951 RD)	Main Belt Asteroid	2.479	2.479	2.479	39.1	20.7	10.3	0.1	0.1	0.0	2	554.8	222.9	222.9	1.89	2.00	3.79	-
1825 Klare (1954 QH)	Main Belt Asteroid	2.450	2.418	2.427	99.7	52.5	26.5	0.8	0.4	0.2	6	126.3	127.3	149.0	1.90	1.99	3.77	-
1826 Miller (1955 RC1)	Main Belt Asteroid	3.034	2.873	3.026	158.1	83.5	42.4	1.6	1.0	0.5	4	98.5	83.4	79.0	1.89	1.97	3.73	-
1827 Atkinson (1962 RK)	Main Belt Asteroid	2.516	2.465	2.467	47.7	25.3	12.8	0.3	0.2	0.2	5	139.4	128.9	55.2	1.89	1.98	3.74	DU
1829 Dawson (1967 JJ)	Main Belt Asteroid	2.222	2.222	2.222	49.4	25.9	13.0				1				1.90	2.00	3.81	-
1833 Shmakova (1969 PN)	Main Belt Asteroid	2.534	2.357	2.362	69.8	36.9	18.7	0.7	0.4	0.2	4	97.7	96.2	89.2	1.89	1.97	3.73	-
1838 Ursa (1971 UC)	Main Belt Asteroid	3.200	3.196	3.198	187.6	99.7	50.2	0.5	0.3	0.5	6	366.4	312.8	109.6	1.88	1.99	3.74	-
1842 Hynek (1972 AA)	Main Belt Asteroid	2.455	2.411	2.434	47.1	24.9	12.4	0.2	0.2	0.1	6	245.2	141.1	114.5	1.89	2.00	3.78	S
1848 Delvaux (1933 QD)	Main Belt Asteroid	2.867	2.855	2.866	165.8	87.7	44.5	1.2	0.6	0.6	5	134.7	155.1	73.5	1.89	1.97	3.73	S
1854 Skvortsov (1968 UE1)	Main Belt Asteroid	2.757	2.757	2.757	41.3	21.8	10.9				1				1.89	2.00	3.79	-
1858 Lobachevskij (1972 QL)	Main Belt Asteroid	2.671	2.530	2.536	73.2	38.8	19.4	0.2	0.1	0.1	4	295.2	419.1	129.8	1.89	2.00	3.78	L
1866 Sisyphus (1972 XA)	Near Earth Object	1.159	1.052	1.106	50.7	26.5	13.2	1.0	0.5	0.3	2	53.2	51.2	49.7	1.92	2.01	3.84	S
1870 Glaukos (1971 FE)	Jupiter Trojan	5.157	5.157	5.157	181.2	97.0	48.5				1				1.87	2.00	3.74	-
1873 Agenor (1971 FH)	Jupiter Trojan	5.702	5.653	5.656	274.7	147.5	74.6	1.5	1.3	0.3	4	187.1	116.2	222.2	1.86	1.98	3.68	-
1880 McCrosky (1940 AN)	Main Belt Asteroid	2.613	2.493	2.497	73.6	38.8	19.5	0.5	0.3	0.2	4	152.6	141.7	109.0	1.90	1.99	3.77	-
1893 Jakoba (1971 UD)	Main Belt Asteroid	2.776	2.710	2.714	86.9	46.1	23.0	0.8	0.6	0.2	4	108.6	72.8	94.4	1.89	2.00	3.77	-
1901 Moravia (1972 AD)	Main Belt Asteroid	3.095	3.094	3.094	109.9	58.3	29.3	0.1	0.0	0.2	4	1255.9	2235.2	169.3	1.89	1.99	3.75	-
1908 Pobeda (1972 RL2)	Main Belt Asteroid	2.971	2.965	2.971	164.0	86.7	43.7	1.3	0.8	0.4	5	130.3	107.8	122.2	1.89	1.98	3.75	-
1911 Schubart (1973 UD)	Main Belt Asteroid	4.228	3.959	4.215	313.4	167.6	84.8	4.1	2.1	1.3	4	77.3	81.4	67.8	1.87	1.98	3.70	P
1913 Sekanina (1928 SF)	Main Belt Asteroid	2.655	2.653	2.653	96.3	51.1	25.5	0.4	0.3	0.3	7	224.2	148.9	100.6	1.88	2.01	3.78	-
1941 Wild (1931 TN1)	Main Belt Asteroid	3.145	3.145	3.145	82.7	43.5	22.2				1				1.90	1.96	3.73	-
1945 Wesselink (1930 OL)	Main Belt Asteroid	2.252	2.098	2.102	37.4	19.7	9.9	0.2	0.1	0.1	4	160.2	139.0	175.8	1.90	1.99	3.78	-

1946 Walraven (1931 PH)	Main Belt Asteroid	1.816	1.768	1.798	76.8	40.3	20.2	0.8	0.4	0.2	6	90.5	89.9	112.5	1.90	2.00	3.80	-
1953 Rupertwildt (1951 UK)	Main Belt Asteroid	2.626	2.612	2.619	82.8	43.6	22.2	1.1	0.2	0.1	2	74.7	207.9	177.7	1.90	1.96	3.72	-
1955 McMath (1963 SR)	Main Belt Asteroid	2.709	2.697	2.700	60.9	31.9	16.3	0.7	0.5	0.1	4	88.5	68.0	126.9	1.91	1.95	3.73	-
1959 Karbyshev (1972 NB)	Main Belt Asteroid	2.210	2.210	2.210	33.7	17.9	8.7				1				1.88	2.05	3.86	-
1968 Mehltrretter (1932 BK)	Main Belt Asteroid	3.015	2.995	3.009	92.4	49.1	24.7	0.3	0.4	0.4	7	277.5	121.8	69.3	1.88	1.99	3.74	S
1970 Sumeria (1954 ER)	Main Belt Asteroid	2.885	2.885	2.885	49.4	25.9	12.9				1				1.91	2.00	3.82	Ch
1971 Hagihara (1955 RD1)	Main Belt Asteroid	2.794	2.794	2.794	49.6	26.4	12.9				1				1.88	2.05	3.85	-
1986 Plaut (1935 SV1)	Main Belt Asteroid	2.469	2.465	2.465	69.9	36.7	18.4	0.8	0.6	0.2	6	83.0	58.9	90.3	1.90	1.99	3.79	-
1988 Delores (1952 SV)	Main Belt Asteroid	2.027	1.934	1.934	18.2	9.6	4.7	0.1	0.0	0.1	8	223.8	278.0	74.5	1.89	2.05	3.86	-
1998 Titius (1938 DX1)	Main Belt Asteroid	2.564	2.558	2.561	56.0	29.7	14.9	0.2	0.1	0.2	5	367.1	216.5	73.9	1.89	1.99	3.75	Xc
2006 Polonskaya (1973 SB3)	Main Belt Asteroid	2.024	1.956	1.990	31.6	16.5	8.3	0.1	0.1	0.1	5	342.0	198.9	112.6	1.91	1.98	3.79	-
2017 Wesson (A903 SC)	Main Belt Asteroid	2.009	2.009	2.009	36.6	19.0	9.5				1				1.92	2.00	3.84	-
2020 Ukko (1936 FR)	Main Belt Asteroid	3.155	3.033	3.133	129.5	68.9	34.6	1.0	0.5	0.4	9	134.2	126.2	98.8	1.88	1.99	3.74	-
2033 Basilea (1973 CA)	Main Belt Asteroid	2.156	2.156	2.156	31.2	16.4	8.0				1				1.90	2.05	3.89	-
2058 Roka (1938 BH)	Main Belt Asteroid	2.784	2.763	2.764	112.6	59.3	30.0	0.3	0.2	0.2	3	441.6	355.6	137.0	1.90	1.98	3.76	-
2060 Chiron (1977 UB)	Centaur	16.28 3	16.28 2	16.282	5479.2	3071.7	1605.0	3.8	2.1	1.1	2	1434.3	1434.3	1434.3	1.78	1.91	3.41	Cb
2067 Aksnes (1936 DD)	Main Belt Asteroid	3.856	3.813	3.834	234.6	125.0	63.4	2.8	1.5	0.8	3	83.7	83.7	78.8	1.88	1.97	3.70	P
2081 Sazava (1976 DH)	Main Belt Asteroid	2.230	2.230	2.230	63.9	33.7	17.2				1				1.90	1.96	3.72	F
2084 Okayama (1935 CK)	Main Belt Asteroid	2.151	2.149	2.149	65.0	34.2	17.1	0.3	0.1	0.1	7	225.2	251.2	131.6	1.90	2.00	3.79	-
2091 Sampo (1941 HO)	Main Belt Asteroid	2.857	2.852	2.857	282.8	149.8	75.6	0.2	0.1	0.1	3	1323.5	1556.8	1042.7	1.89	1.98	3.74	-
2092 Sumiana (1969 UP)	Main Belt Asteroid	2.883	2.830	2.841	77.6	41.0	20.7	0.8	0.5	0.4	7	102.0	79.2	58.1	1.89	1.97	3.74	-
2111 Tselina (1969 LG)	Main Belt Asteroid	2.830	2.739	2.803	270.1	143.0	72.2	2.1	1.3	0.4	8	129.4	114.2	173.6	1.89	1.98	3.74	S
2114 Wallenquist (1976 HA)	Main Belt Asteroid	3.511	3.511	3.511	78.4	41.3	21.2				1				1.90	1.95	3.70	-
2115 Irakli (1976 UD)	Main Belt Asteroid	3.167	3.163	3.166	158.1	83.6	42.4	1.0	0.6	0.4	6	162.3	137.6	95.5	1.89	1.97	3.73	-
2123 Vltava (1973 SL2)	Main Belt Asteroid	3.066	2.658	2.659	106.1	56.1	28.3	3.6	2.0	1.2	3	29.8	28.2	24.5	1.89	1.98	3.75	-
2125 Karl-Ontjes (2005 P-L)	Main Belt Asteroid	2.577	2.547	2.567	75.2	39.8	20.0	0.8	0.4	0.3	6	94.3	98.1	65.7	1.89	1.99	3.76	-
2132 Zhukov (1975 TW3)	Main Belt Asteroid	2.711	2.578	2.679	114.2	60.5	30.5	0.8	0.4	0.3	13	139.3	159.0	111.2	1.89	1.99	3.75	-
2136 Jugta (1933 OC)	Main Belt Asteroid	3.090	3.082	3.083	129.9	69.2	34.7	0.5	0.1	0.2	3	283.5	922.5	187.3	1.88	2.00	3.74	-
2141 Simferopol (1970 QC1)	Main Belt Asteroid	2.450	2.450	2.450	118.0	62.1	31.5				1				1.90	1.98	3.75	Sl
2152 Hannibal (1978 WK)	Main Belt Asteroid	2.466	2.466	2.466	232.8	123.1	62.0				1				1.89	1.99	3.76	Ch
2156 Kate (A917 SH)	Main Belt Asteroid	1.834	1.819	1.826	39.1	20.5	10.3	0.1	0.0	0.1	4	560.8	1247.0	163.0	1.91	1.99	3.79	S

2159 Kukkamaki (1941 UX)	Main Belt Asteroid	2.485	2.467	2.473	64.5	33.8	17.3	0.6	0.3	0.3	7	103.1	98.6	65.5	1.91	1.96	3.74	-
2165 Young (1956 RJ)	Main Belt Asteroid	2.776	2.590	2.735	125.1	66.3	33.5	1.4	0.8	0.4	6	89.3	78.1	78.2	1.89	1.98	3.74	-
2181 Fogelin (1942 YA)	Main Belt Asteroid	2.859	2.678	2.848	70.8	37.3	18.9	0.7	0.5	0.3	5	103.5	73.4	62.8	1.90	1.97	3.74	-
2183 Neufang (1959 OB)	Main Belt Asteroid	2.164	2.161	2.162	95.9	50.4	25.3	0.0	0.1	0.1	3	24103.8	390.9	214.6	1.90	1.99	3.78	-
2199 Klet (1978 LA)	Main Belt Asteroid	2.174	1.824	1.999	41.4	21.8	11.0	0.9	0.4	0.2	2	46.2	54.6	45.0	1.90	1.99	3.78	-
2200 Pasadena (6090 P-L)	Main Belt Asteroid	2.582	2.582	2.582	32.1	17.0	8.5				1				1.89	2.00	3.79	-
2201 Oljato (1947 XC)	Near Earth Object	1.287	0.989	1.134	3.7	1.9	1.0	0.1	0.1	0.0	6	49.4	33.8	40.5	1.92	2.00	3.84	Sq
2203 van Rhijn (1935 SQ1)	Main Belt Asteroid	2.568	2.568	2.568	109.5	57.9	29.4				1				1.89	1.97	3.73	-
2207 Antenor (1977 QH1)	Jupiter Trojan	5.147	5.123	5.144	878.3	472.0	239.6	2.1	1.8	0.9	5	410.0	265.0	269.0	1.86	1.97	3.66	D
2214 Carol (1953 GF)	Main Belt Asteroid	2.764	2.700	2.733	79.7	42.1	21.1	0.3	0.3	0.1	6	268.4	162.0	157.0	1.89	2.00	3.78	-
2223 Sarpedon (1977 TL3)	Jupiter Trojan	5.241	5.241	5.241	539.9	291.2	146.8				1				1.85	1.98	3.68	DU
2226 Cunitza (1936 QC1)	Main Belt Asteroid	3.101	3.101	3.101	91.5	48.0	24.0				1				1.90	2.00	3.81	-
2228 Soyuz-Apollo (1977 OH)	Main Belt Asteroid	2.660	2.617	2.629	116.3	61.5	31.1	0.9	0.5	0.3	6	136.9	123.3	123.5	1.89	1.98	3.74	-
2237 Melnikov (1938 TB)	Main Belt Asteroid	2.484	2.469	2.476	74.7	39.3	19.9	0.1	0.1	0.1	6	799.5	268.5	180.1	1.90	1.98	3.76	-
2240 Tsai (1978 YA)	Main Belt Asteroid	2.777	2.750	2.763	78.8	41.8	20.9	0.2	0.2	0.2	5	505.6	218.2	114.0	1.89	2.00	3.77	-
2248 Kanda (1933 DE)	Main Belt Asteroid	3.399	3.399	3.399	126.9	67.7	34.3				1				1.87	1.98	3.70	-
2249 Yamamoto (1942 GA)	Main Belt Asteroid	3.299	3.139	3.148	142.1	75.2	37.9	1.4	0.8	0.5	4	99.7	100.3	81.7	1.89	1.98	3.75	-
2266 Tchaikovsky (1974 VK)	Main Belt Asteroid	2.882	2.855	2.867	195.4	103.4	52.2	0.6	0.4	0.2	6	311.5	248.1	282.3	1.89	1.98	3.75	D
2268 Szmytowna (1942 VW)	Main Belt Asteroid	2.857	2.662	2.846	84.6	45.0	22.5	1.2	0.7	0.5	4	72.2	61.6	43.8	1.88	2.00	3.76	S
2269 Efremiana (1976 JA2)	Main Belt Asteroid	3.141	3.118	3.118	160.5	85.4	43.3	1.8	1.0	0.6	3	88.7	85.2	78.2	1.88	1.97	3.71	-
2283 Bunke (1974 SV4)	Main Belt Asteroid	2.396	2.380	2.388	52.2	27.5	13.8	0.2	0.1	0.1	5	230.0	306.4	112.2	1.90	1.99	3.78	-
2291 Kevo (1941 FS)	Main Belt Asteroid	3.187	3.070	3.182	203.9	108.4	54.8	3.4	1.8	0.8	4	60.3	59.3	70.5	1.88	1.98	3.72	-
2293 Guernica (1977 EH1)	Main Belt Asteroid	2.761	2.761	2.761	167.9	88.9	44.9				1				1.89	1.98	3.74	-
2297 Daghestan (1978 RE)	Main Belt Asteroid	3.526	3.363	3.404	124.7	66.2	33.2	1.4	0.9	0.5	5	88.5	77.5	67.4	1.88	1.99	3.75	-
2298 Cindijon (A915 TA)	Main Belt Asteroid	2.069	2.021	2.038	37.6	19.8	10.0	0.1	0.1	0.1	3	361.5	199.1	115.0	1.90	1.99	3.78	-
2303 Retsina (1979 FK)	Main Belt Asteroid	2.647	2.646	2.647	139.0	73.5	36.9	0.1	0.1	0.1	8	1029.0	547.3	273.6	1.89	1.99	3.77	-
2307 Garuda (1957 HJ)	Main Belt Asteroid	3.184	3.092	3.097	156.3	82.8	42.1	0.7	0.5	0.2	4	229.2	168.7	238.2	1.89	1.97	3.72	-
2312 Duboshin (1976 GU2)	Main Belt Asteroid	3.550	3.524	3.537	322.5	171.6	87.3	3.2	2.4	1.0	3	99.6	72.5	89.3	1.88	1.97	3.69	D
2332 Kalm (1940 GH)	Main Belt Asteroid	3.062	2.955	2.980	174.1	92.2	46.7	1.2	0.7	0.4	12	146.7	138.7	122.4	1.89	1.97	3.73	-
2335 James (1974 UB)	Mars Crossing Asteroid	1.606	1.606	1.606	20.8	10.9	5.5				1				1.90	2.00	3.81	Sa
2338 Bokhan (1977 QA3)	Main Belt Asteroid	3.007	3.007	3.007	76.6	40.8	20.9				1				1.88	1.95	3.67	-

2341 Aoluta (1976 YU1)	Main Belt Asteroid	2.048	1.971	1.985	37.7	19.9	10.0	0.2	0.2	0.1	7	186.2	123.6	85.8	1.89	2.00	3.79	-
2344 Xizang (1979 SC1)	Main Belt Asteroid	2.423	2.361	2.402	100.1	52.7	26.6	0.4	0.2	0.2	7	280.3	272.4	138.1	1.90	1.98	3.77	-
2345 Fucik (1974 OS)	Main Belt Asteroid	2.944	2.934	2.939	198.4	105.1	52.8	1.6	1.1	0.3	2	124.6	98.3	190.4	1.89	1.99	3.76	S
2347 Vinata (1936 TK)	Main Belt Asteroid	2.768	2.448	2.747	136.0	72.0	36.2	4.1	2.2	1.0	4	32.8	32.2	35.7	1.89	1.99	3.75	-
2349 Kurchenko (1970 OG)	Main Belt Asteroid	2.450	2.446	2.450	141.6	74.9	37.5	1.1	0.5	0.3	11	126.3	151.9	136.6	1.89	1.99	3.77	Xc
2357 Phereclos (1981 AC)	Jupiter Trojan	5.325	5.264	5.277	823.8	443.6	226.6	5.7	3.3	1.9	3	143.3	133.6	121.9	1.86	1.96	3.64	D
2361 Gogol (1976 GQ1)	Main Belt Asteroid	3.194	3.194	3.194	61.8	33.0	16.5				1				1.88	2.00	3.75	-
2370 van Altena (1965 LA)	Main Belt Asteroid	2.276	2.276	2.276	33.1	17.6	8.6				1				1.88	2.05	3.85	Cb
2374 Vladvysotskij (1974 QE1)	Main Belt Asteroid	2.551	2.551	2.551	96.8	51.3	25.7				1				1.89	2.00	3.77	-
2375 Radek (1975 AA)	Main Belt Asteroid	3.758	3.748	3.757	206.8	110.2	56.2	0.3	0.3	0.4	6	793.7	346.1	128.8	1.88	1.96	3.68	D
2376 Martynov (1977 QG3)	Main Belt Asteroid	2.852	2.852	2.852	200.5	106.2	53.1				1				1.89	2.00	3.78	-
2384 Schulhof (1943 EC1)	Main Belt Asteroid	2.920	2.802	2.837	77.4	41.1	20.9	0.7	0.2	0.2	11	108.2	168.1	92.1	1.88	1.97	3.71	-
2386 Nikonov (1974 SN1)	Main Belt Asteroid	2.438	2.438	2.438	100.9	53.1	27.0				1				1.90	1.97	3.74	S
2396 Kochi (1981 CB)	Main Belt Asteroid	2.996	2.995	2.996	111.0	59.1	29.5	0.4	0.3	0.1	5	299.9	182.3	330.2	1.88	2.00	3.76	Sa
2410 Morrison (1981 AF)	Main Belt Asteroid	2.346	2.340	2.345	39.7	20.8	10.5	0.1	0.1	0.2	4	289.5	158.3	66.8	1.90	1.98	3.76	Sl
2411 Zellner (1981 JK)	Main Belt Asteroid	2.393	2.393	2.393	34.9	18.3	9.3				1				1.90	1.96	3.73	S
2416 Sharonov (1979 OF13)	Main Belt Asteroid	3.122	3.119	3.119	143.5	76.2	38.6	0.3	0.2	0.1	3	423.3	337.6	342.7	1.88	1.98	3.72	-
2420 Ciurlionis (1975 TN)	Main Belt Asteroid	2.350	2.350	2.350	64.3	33.9	17.3				1				1.90	1.96	3.72	-
2426 Simonov (1976 KV)	Main Belt Asteroid	3.141	2.942	2.954	101.0	53.2	27.0	1.4	0.6	0.5	4	71.7	85.4	53.4	1.90	1.97	3.73	-
2438 Oleshko (1975 VO2)	Main Belt Asteroid	2.485	2.408	2.408	32.7	17.3	8.7	0.0	0.2	0.0	4	799.5	101.5	304.6	1.89	1.98	3.75	S
2450 Ioannisianni (1978 RP)	Main Belt Asteroid	3.445	3.441	3.443	87.3	46.5	23.2	0.1	0.3	0.2	2	634.5	149.3	149.3	1.88	2.00	3.76	-
2452 Lyot (1981 FE)	Main Belt Asteroid	3.531	3.527	3.531	114.7	60.8	30.4	0.8	0.9	0.5	5	150.5	68.7	55.7	1.89	2.00	3.77	-
2454 Olaus Magnus (1941 SS)	Main Belt Asteroid	2.064	1.798	1.798	20.3	10.7	5.4	0.1	0.1	0.1	4	185.9	196.0	59.4	1.90	1.99	3.79	-
2461 Clavel (1981 EC1)	Main Belt Asteroid	2.696	2.681	2.692	94.8	50.3	25.1	1.0	0.6	0.3	6	96.8	84.7	100.2	1.88	2.00	3.77	-
2471 Ultrajectum (6545 P-L)	Main Belt Asteroid	2.968	2.818	2.830	85.1	45.0	22.7	0.6	0.3	0.1	5	144.9	149.1	155.8	1.89	1.99	3.75	-
2478 Tokai (1981 JC)	Main Belt Asteroid	2.278	2.278	2.278	71.7	37.9	18.9				1				1.89	2.00	3.79	S
2490 Bussolini (1976 AG)	Main Belt Asteroid	2.591	2.334	2.577	80.2	42.3	21.3	1.3	0.7	0.3	4	61.6	63.0	69.9	1.90	1.98	3.76	-
2498 Tsesevich (1977 QM3)	Main Belt Asteroid	2.744	2.682	2.682	86.4	45.6	23.1	0.2	0.2	0.1	4	353.5	192.0	171.0	1.89	1.97	3.73	-
2500 Alascattalo (1926 GC)	Main Belt Asteroid	2.460	2.457	2.457	43.0	22.7	11.3	0.1	0.2	0.1	5	369.5	149.8	149.8	1.90	2.00	3.79	-
2502 Nummela (1943 EO)	Main Belt Asteroid	3.262	3.190	3.213	98.6	52.3	26.1	1.1	0.4	0.4	7	88.8	140.3	69.2	1.89	2.00	3.77	-
2509 Chukotka (1977 NG)	Main Belt Asteroid	1.989	1.984	1.984	38.7	20.3	10.2	0.3	0.2	0.1	3	144.5	110.4	151.3	1.91	1.98	3.78	C

2511 Patterson (1980 LM)	Main Belt Asteroid	2.370	2.147	2.166	40.3	21.3	10.6	0.4	0.2	0.1	5	93.0	87.9	98.5	1.89	2.00	3.79	V
2512 Tavastia (1940 GG)	Main Belt Asteroid	2.284	2.029	2.228	48.3	25.5	12.8	0.5	0.3	0.2	17	89.4	87.9	72.6	1.89	2.00	3.78	-
2516 Roman (1964 VV)	Main Belt Asteroid	1.948	1.948	1.948	18.6	9.9	4.9				1				1.88	2.00	3.77	-
2522 Triglav (1980 PP)	Main Belt Asteroid	3.188	3.148	3.188	117.7	62.3	31.5	0.6	0.4	0.2	4	189.3	142.2	193.8	1.89	1.98	3.74	-
2523 Ryba (1980 PV)	Main Belt Asteroid	3.136	3.107	3.110	142.5	75.8	38.4	0.4	0.3	0.2	4	345.3	270.6	210.8	1.88	1.97	3.71	-
2527 Gregory (1981 RE)	Main Belt Asteroid	2.075	2.049	2.062	23.7	12.4	6.3	0.2	0.1	0.0	2	103.3	145.0	194.1	1.91	1.98	3.77	B
2531 Cambridge (1980 LD)	Main Belt Asteroid	3.175	3.172	3.175	186.1	98.9	49.9	0.2	0.1	0.2	3	1220.9	1203.0	273.7	1.88	1.98	3.73	-
2535 Hameenlinna (1939 DH)	Main Belt Asteroid	2.173	2.172	2.173	53.9	28.5	14.3	0.1	0.0	0.1	2	872.5	1184.8	222.0	1.89	1.99	3.77	-
2541 Edebono (1973 DE)	Main Belt Asteroid	2.694	2.693	2.694	72.7	38.6	19.3	0.1	0.1	0.1	3	1379.3	333.8	263.7	1.89	2.00	3.77	-
2554 Skiff (1980 OB)	Main Belt Asteroid	2.475	2.460	2.467	39.3	20.6	10.5	0.0	0.1	0.2	2	3636.7	261.7	60.7	1.91	1.97	3.76	-
2566 Kirghizia (1979 FR2)	Main Belt Asteroid	2.507	2.484	2.490	51.8	27.5	13.9	0.5	0.2	0.3	6	115.2	114.6	55.4	1.89	1.97	3.73	V
2574 Ladoga (1968 UP)	Main Belt Asteroid	2.763	2.747	2.755	95.0	50.4	25.5	0.3	0.2	0.3	6	304.1	216.1	95.7	1.89	1.98	3.73	-
2576 Yesenin (1974 QL)	Main Belt Asteroid	3.393	2.698	3.393	126.6	67.1	34.0	3.7	1.9	0.9	9	34.6	35.2	38.2	1.89	1.97	3.73	-
2578 Saint-Exupery (1975 VW3)	Main Belt Asteroid	2.733	2.723	2.723	116.6	61.9	31.1	1.2	0.7	0.4	5	100.4	84.9	81.6	1.88	1.99	3.75	-
2583 Fatyanov (1975 XA3)	Main Belt Asteroid	1.832	1.786	1.791	32.2	16.9	8.5	0.1	0.1	0.1	16	256.5	328.1	101.4	1.90	1.99	3.79	-
2600 Lumme (1980 VP)	Main Belt Asteroid	2.954	2.933	2.944	93.3	49.4	24.9	0.5	0.3	0.3	5	198.4	148.7	74.1	1.89	1.98	3.75	-
2603 Taylor (1982 BW1)	Main Belt Asteroid	2.735	2.678	2.683	49.9	26.4	13.2	0.2	0.1	0.1	4	305.4	270.9	130.3	1.89	2.00	3.78	-
2612 Kathryn (1979 DE)	Main Belt Asteroid	3.014	3.014	3.014	177.5	93.6	47.3				1				1.90	1.98	3.75	-
2613 Plzen (1979 QE)	Main Belt Asteroid	3.006	3.000	3.005	110.3	58.8	29.4	0.5	0.2	0.1	3	205.7	258.2	258.2	1.88	2.00	3.76	-
2626 Belnika (1978 PP2)	Main Belt Asteroid	2.903	2.859	2.901	93.3	49.2	24.7	0.5	0.4	0.2	4	180.8	128.3	99.8	1.90	1.99	3.78	-
2627 Churyumov (1978 PP3)	Main Belt Asteroid	2.738	2.699	2.700	67.3	35.5	18.2	0.7	0.2	0.4	5	102.3	183.9	46.1	1.89	1.95	3.70	-
2634 James Bradley (1982 DL)	Main Belt Asteroid	3.514	3.501	3.502	242.9	129.0	65.3	2.2	1.4	0.8	5	112.7	93.3	78.5	1.88	1.98	3.72	-
2651 Karen (1949 QD)	Main Belt Asteroid	2.844	2.844	2.844	93.5	49.5	25.1				1				1.89	1.97	3.72	-
2665 Schrutka (1938 DW1)	Main Belt Asteroid	2.391	2.391	2.391	30.0	15.6	7.8				1				1.92	2.00	3.84	-
2670 Chuvashia (1977 PW1)	Main Belt Asteroid	3.134	3.125	3.125	175.6	92.9	46.9	0.8	0.7	0.4	3	233.8	135.3	106.9	1.89	1.98	3.74	-
2674 Pandarus (1982 BC3)	Jupiter Trojan	5.490	5.434	5.441	703.0	376.0	192.6	2.7	2.3	1.5	3	265.1	163.8	129.6	1.87	1.95	3.65	D
2679 Kittisvaara (1939 TG)	Main Belt Asteroid	2.665	2.623	2.636	73.3	38.8	19.5	0.7	0.4	0.3	6	111.5	105.4	71.8	1.89	1.99	3.76	-
2684 Douglas (1981 AH1)	Main Belt Asteroid	2.981	2.981	2.981	102.5	54.8	27.9				1				1.87	1.96	3.68	-
2687 Tortali (1982 HG)	Main Belt Asteroid	2.473	2.420	2.456	76.2	40.3	20.1	0.3	0.2	0.2	6	231.0	217.9	102.6	1.89	2.01	3.80	-
2698 Azerbajdzhan (1971 TZ)	Main Belt Asteroid	2.676	2.676	2.676	59.8	31.6	15.8				1				1.90	2.00	3.79	-
2706 Borovsky (1980 VW)	Main Belt Asteroid	3.064	3.055	3.059	83.4	44.1	22.3	0.3	0.3	0.2	6	239.7	141.0	111.2	1.89	1.98	3.74	-

2718 Handley (1951 OM)	Main Belt Asteroid	3.017	2.749	2.795	85.0	44.9	22.8	1.3	0.7	0.4	5	67.9	60.1	53.1	1.89	1.97	3.73	-
2726 Kotelnikov (1979 SE9)	Main Belt Asteroid	2.754	2.754	2.754	60.0	31.6	15.8				1				1.90	2.00	3.79	-
2734 Hasek (1976 GJ3)	Main Belt Asteroid	3.226	3.216	3.226	88.4	46.9	23.4	0.6	0.2	0.2	12	152.0	202.8	120.3	1.89	2.00	3.77	-
2741 Valdivia (1975 XG)	Main Belt Asteroid	2.426	2.426	2.426	82.0	43.4	21.7				1				1.89	2.00	3.78	-
2742 Gibson (1981 JG3)	Main Belt Asteroid	2.953	2.953	2.953	77.1	41.0	20.5				1				1.88	2.00	3.76	-
2747 Cesky Krumlov (1980 DW)	Main Belt Asteroid	3.376	3.376	3.376	79.3	42.7	21.4				1				1.86	2.00	3.71	-
2760 Kacha (1980 TU6)	Main Belt Asteroid	4.184	4.184	4.184	337.2	180.1	91.5				1				1.87	1.97	3.69	X
2763 Jeans (1982 OG)	Main Belt Asteroid	2.060	1.890	1.903	60.7	31.9	16.0	0.1	0.1	0.1	4	413.1	504.9	277.0	1.90	2.00	3.80	V
2768 Gorky (1972 RX3)	Main Belt Asteroid	2.062	1.852	1.957	60.5	31.9	16.1	0.6	0.3	0.2	2	105.9	105.0	101.9	1.90	1.98	3.76	-
2770 Tsvet (1977 SM1)	Main Belt Asteroid	2.301	2.287	2.294	36.3	19.1	9.6	0.2	0.2	0.0	2	145.1	101.8	598.1	1.90	1.98	3.76	-
2779 Mary (1981 CX)	Main Belt Asteroid	2.346	2.346	2.346	25.5	13.2	6.8				1				1.92	1.95	3.75	-
2781 Kleczek (1982 QH)	Main Belt Asteroid	2.813	2.813	2.813	77.6	41.4	20.7				1				1.88	2.00	3.75	-
2785 Sedov (1978 QN2)	Main Belt Asteroid	2.902	2.902	2.902	53.1	28.1	14.0				1				1.89	2.00	3.78	-
2791 Paradise (1977 CA)	Main Belt Asteroid	2.809	2.807	2.809	53.7	28.4	14.4	0.3	0.2	0.2	3	194.4	130.5	88.0	1.89	1.97	3.73	Sa
2793 Valdaj (1977 QV)	Main Belt Asteroid	3.257	3.255	3.257	117.8	62.6	31.9	0.4	0.6	0.3	4	265.3	112.9	106.0	1.88	1.96	3.70	-
2796 Kron (1980 EC)	Main Belt Asteroid	2.914	2.903	2.908	58.2	30.6	15.3	0.1	0.2	0.2	9	587.0	130.6	84.0	1.90	2.00	3.81	-
2811 Stremchovi (1980 JA)	Main Belt Asteroid	2.794	2.787	2.790	78.6	41.5	20.8	0.3	0.3	0.3	6	304.2	139.6	75.8	1.89	2.00	3.78	-
2815 Soma (1982 RL)	Main Belt Asteroid	1.941	1.889	1.915	42.2	22.2	11.1	0.1	0.0	0.0	2	471.8	2672.2	222.7	1.91	1.99	3.80	-
2816 Pien (1982 SO)	Main Belt Asteroid	2.238	2.238	2.238	84.4	44.5	22.3	0.0	0.0	0.0	2	5254.4	5254.4	5254.4	1.89	2.00	3.79	B
2820 Ilisalmi (1942 RU)	Main Belt Asteroid	1.980	1.896	1.965	31.6	16.7	8.3	0.4	0.2	0.1	4	85.0	83.0	83.0	1.89	2.00	3.79	-
2825 Crosby (1938 SD1)	Main Belt Asteroid	2.169	1.879	2.024	26.1	13.8	6.8	0.5	0.3	0.1	2	53.6	55.1	49.5	1.89	2.04	3.86	-
2845 Franklinken (1981 OF)	Main Belt Asteroid	2.122	2.122	2.122	23.4	12.3	6.2	0.0	0.0	0.0	3	753.7	753.7	753.7	1.90	2.00	3.80	-
2861 Lambrecht (1981 VL2)	Main Belt Asteroid	2.398	2.301	2.350	39.9	21.1	10.5	0.6	0.3	0.1	2	69.8	63.0	126.9	1.89	2.02	3.81	Xc
2878 Panacea (1980 RX)	Main Belt Asteroid	2.802	2.800	2.802	77.4	40.9	20.7	0.2	0.2	0.2	3	394.3	183.2	91.3	1.89	1.97	3.74	-
2879 Shimizu (1932 CB1)	Main Belt Asteroid	3.115	3.102	3.103	67.9	36.1	17.9	0.1	0.3	0.3	3	738.3	125.2	61.1	1.88	2.01	3.78	X
2884 Reddish (1981 ES22)	Main Belt Asteroid	2.716	2.698	2.707	74.9	39.6	20.0	0.9	0.3	0.1	2	86.5	137.7	236.2	1.89	1.98	3.74	-
2889 Brno (1981 WT1)	Main Belt Asteroid	2.711	2.692	2.702	114.2	60.4	30.3	0.5	0.1	0.1	2	238.5	692.6	337.7	1.89	1.99	3.76	-
2890 Vilyujsk (1978 SY7)	Main Belt Asteroid	2.073	2.037	2.038	28.5	15.0	7.6	0.0	0.1	0.1	3	1093.4	200.1	71.8	1.90	1.96	3.73	-
2891 McGetchin (1980 MD)	Main Belt Asteroid	3.001	3.001	3.001	159.3	84.7	42.3				1				1.88	2.00	3.76	-
2893 Peiroos (1975 QD)	Jupiter Trojan	4.963	4.954	4.954	652.0	350.1	178.4	1.1	1.2	0.6	3	588.9	297.5	317.7	1.86	1.96	3.65	D
2895 Memnon (1981 AE1)	Jupiter Trojan	5.081	5.081	5.081	319.0	170.7	86.8				1				1.87	1.97	3.68	-

2896 Preiss (1931 RN)	Main Belt Asteroid	2.379	2.379	2.379	43.6	22.8	11.6					1				1.91	1.96	3.75	-
2900 Lubos Perek (1972 AR)	Main Belt Asteroid	2.935	2.935	2.935	77.4	40.7	20.8					1				1.90	1.95	3.71	-
2905 Plaskett (1982 BZ2)	Main Belt Asteroid	2.800	2.800	2.800	64.8	34.1	17.3					1				1.90	1.97	3.74	S
2913 Horta (1931 TK)	Main Belt Asteroid	2.174	2.164	2.168	64.8	34.0	17.1	0.3	0.2	0.2	6	251.8	194.0	103.0	1.90	1.99	3.80	-	
2919 Dali (1981 EX18)	Main Belt Asteroid	3.282	3.281	3.281	68.0	36.2	18.3	0.3	0.3	0.1	2	266.0	120.6	266.0	1.88	1.98	3.71	-	
2928 Epstein (1976 GN8)	Main Belt Asteroid	2.928	2.928	2.928	111.0	58.6	29.7					1				1.90	1.97	3.74	-
2929 Harris (1982 BK1)	Main Belt Asteroid	3.331	3.327	3.328	87.0	46.7	23.9	0.1	0.3	0.1	3	700.7	167.2	195.5	1.86	1.96	3.64	T	
2934 Aristophanes (4006 P-L)	Main Belt Asteroid	3.217	3.207	3.212	89.9	47.5	24.0	0.4	0.2	0.3	6	239.0	212.8	78.5	1.89	1.98	3.74	Ch	
2936 Nechvile (1979 SF)	Main Belt Asteroid	2.481	2.481	2.481	68.4	36.1	18.1					1				1.89	2.00	3.79	-
2947 Kippenhahn (1955 QP1)	Main Belt Asteroid	2.237	2.216	2.227	40.9	21.5	10.9	0.4	0.0	0.1	2	97.6	3904.7	73.6	1.90	1.97	3.75	-	
2953 Vysheslavia (1979 SV11)	Main Belt Asteroid	2.863	2.821	2.823	84.9	45.2	22.7	0.3	0.4	0.2	4	269.4	127.1	93.2	1.88	1.99	3.74	S	
2955 Newburn (1982 BX1)	Main Belt Asteroid	2.018	1.998	1.999	23.6	12.5	6.3	0.0	0.1	0.1	3	1592.2	149.9	111.4	1.90	1.97	3.75	S	
2956 Yeomans (1982 HN1)	Main Belt Asteroid	2.985	2.978	2.984	58.3	31.0	15.5	0.2	0.1	0.1	3	321.1	216.7	216.7	1.88	2.00	3.76	Sr	
2963 Chen Jiageng (1964 VM1)	Main Belt Asteroid	2.785	2.677	2.778	53.9	28.8	14.4	0.4	0.2	0.2	4	127.1	149.7	66.0	1.88	2.00	3.75	-	
2964 Jaschek (1974 OA1)	Main Belt Asteroid	2.321	2.321	2.321	39.8	21.0	10.5					1				1.90	2.00	3.80	-
2967 Vladisvyat (1977 SS1)	Main Belt Asteroid	2.798	2.781	2.785	167.3	88.6	44.3	2.0	1.1	0.5	6	81.7	83.9	84.0	1.89	2.00	3.78	-	
2970 Pestalozzi (1978 UC)	Main Belt Asteroid	2.636	2.636	2.636	42.0	22.2	11.1					1				1.90	2.00	3.79	-
2978 Roudebush (1978 SR)	Main Belt Asteroid	2.678	2.658	2.659	61.0	32.1	16.3	0.2	0.2	0.1	3	276.2	146.9	178.1	1.90	1.97	3.74	-	
2979 Murmansk (1978 TB7)	Main Belt Asteroid	2.709	2.709	2.709	45.6	24.0	12.3					1				1.90	1.95	3.70	-
2980 Cameron (1981 EU17)	Main Belt Asteroid	2.129	2.129	2.129	19.8	10.5	5.4					1				1.88	1.95	3.68	-
2986 Mrinalini (2525 P-L)	Main Belt Asteroid	2.699	2.686	2.699	67.4	35.8	18.0	0.5	0.3	0.2	5	148.6	106.2	105.5	1.88	1.99	3.75	-	
2988 Korhonen (1943 EM)	Main Belt Asteroid	2.872	2.667	2.691	86.4	46.0	23.2	0.9	0.5	0.1	3	98.5	96.0	155.7	1.88	1.98	3.72	S	
2993 Wendy (1970 PA)	Main Belt Asteroid	2.201	2.199	2.200	71.5	37.4	18.9	0.1	0.0	0.2	2	898.0	1318.6	122.5	1.91	1.99	3.79	-	
2995 Taratuta (1978 QK)	Main Belt Asteroid	2.880	2.669	2.860	64.4	33.7	17.2	0.8	0.5	0.2	7	84.5	65.8	82.5	1.91	1.96	3.74	-	
2997 Cabrera (1974 MJ)	Main Belt Asteroid	2.124	2.091	2.123	42.0	22.1	11.2	0.4	0.3	0.2	5	113.1	79.2	53.3	1.90	1.97	3.75	-	
3011 Chongqing (1978 WM14)	Main Belt Asteroid	2.651	2.651	2.651	46.1	24.3	12.1					1				1.90	2.00	3.80	-
3015 Candy (1980 VN)	Main Belt Asteroid	2.982	2.937	2.967	162.0	85.8	43.3	0.7	0.2	0.4	7	235.0	425.4	118.0	1.89	1.98	3.74	-	
3016 Meuse (1981 EK)	Main Belt Asteroid	2.840	2.770	2.840	53.4	28.3	14.5	0.4	0.3	0.1	4	136.6	81.6	154.0	1.88	1.96	3.69	-	
3022 Dobermann (1980 SH)	Main Belt Asteroid	1.857	1.857	1.857	12.9	6.7	3.4					1				1.92	1.95	3.75	-
3024 Hainan (1981 UW9)	Main Belt Asteroid	3.071	3.071	3.071	207.2	109.7	55.6					1				1.89	1.97	3.73	-
3031 Houston (1984 CX)	Main Belt Asteroid	2.456	2.456	2.456	32.5	17.1	8.6					1				1.90	2.00	3.80	-

3032 Evans (1984 CA1)	Main Belt Asteroid	2.699	2.686	2.693	104.7	55.5	27.9	0.3	0.2	0.2	5	357.4	295.9	127.1	1.89	1.99	3.76	-
3033 Holbaek (1984 EJ)	Main Belt Asteroid	2.439	2.439	2.439	36.2	19.2	9.6				1				1.88	2.00	3.77	-
3036 Krat (1937 TO)	Main Belt Asteroid	2.935	2.935	2.935	304.0	160.9	80.8				1				1.89	1.99	3.76	-
3039 Yangel (1978 SP2)	Main Belt Asteroid	2.799	2.799	2.799	49.4	26.3	13.3	0.2	0.2	0.1	2	237.3	127.6	237.3	1.88	1.98	3.71	-
3044 Saltykov (1983 RE3)	Main Belt Asteroid	2.656	2.425	2.540	80.9	42.6	21.4	1.3	0.7	0.2	2	61.2	65.2	112.7	1.90	1.99	3.77	-
3051 Nantong (1974 YP)	Main Belt Asteroid	1.979	1.962	1.963	55.6	29.3	14.7	0.2	0.2	0.1	4	242.6	169.8	130.4	1.90	1.99	3.77	-
3067 Akhmatova (1982 TE2)	Main Belt Asteroid	2.351	2.076	2.213	30.5	16.2	8.2	0.6	0.4	0.1	2	50.9	39.1	77.2	1.89	1.98	3.73	-
3088 Jinxiuzhonghua (1981 UX9)	Main Belt Asteroid	3.156	3.079	3.153	98.3	52.3	26.5	0.7	0.2	0.2	4	133.2	216.9	125.4	1.88	1.97	3.71	-
3092 Herodotus (6550 P-L)	Main Belt Asteroid	3.853	3.853	3.853	121.5	64.7	32.9				1				1.88	1.97	3.69	-
3099 Hergenrother (1940 GF)	Main Belt Asteroid	2.531	2.531	2.531	127.9	67.5	34.0				1				1.89	1.98	3.76	-
3107 Weaver (1981 JG2)	Main Belt Asteroid	2.084	2.082	2.083	21.7	11.5	5.7	0.0	0.1	0.1	2	1651.4	171.1	53.9	1.89	2.00	3.78	-
3110 Wagman (1975 SC)	Main Belt Asteroid	2.414	2.261	2.338	36.4	19.3	9.7	0.6	0.4	0.0	2	65.5	45.4	451.0	1.89	1.99	3.76	-
3116 Goodricke (1983 CF)	Main Belt Asteroid	1.862	1.810	1.843	52.6	27.6	13.8	0.5	0.3	0.2	6	113.3	89.8	83.9	1.90	1.99	3.80	-
3118 Claytonsmith (1974 OD)	Main Belt Asteroid	3.176	3.169	3.169	170.4	90.5	45.3	0.9	0.4	0.3	3	200.3	218.1	164.0	1.88	2.00	3.76	-
3120 Dangrania (1979 RZ)	Main Belt Asteroid	2.804	2.794	2.795	94.4	50.0	25.2	0.3	0.2	0.1	3	308.5	267.2	295.6	1.89	1.98	3.74	-
3132 Landgraf (1940 WL)	Main Belt Asteroid	2.883	2.769	2.873	92.5	49.0	24.7	0.7	0.5	0.3	4	133.4	91.6	93.1	1.89	1.98	3.74	-
3151 Talbot (1983 HF)	Main Belt Asteroid	3.044	3.044	3.044	110.5	58.6	29.3				1				1.89	2.00	3.77	5
3157 Novikov (1973 SX3)	Main Belt Asteroid	2.769	2.717	2.762	102.8	54.2	27.5	0.7	0.4	0.2	4	141.1	144.3	160.8	1.90	1.98	3.74	-
3165 Mikawa (1984 QE)	Main Belt Asteroid	2.120	2.068	2.095	41.2	21.7	10.9	0.1	0.2	0.1	6	440.8	137.7	86.9	1.90	1.99	3.79	-
3172 Hirst (1981 WW)	Main Belt Asteroid	2.020	1.970	2.007	26.3	13.9	7.0	0.1	0.1	0.1	6	320.0	168.2	102.3	1.90	1.99	3.78	-
3180 Morgan (1962 RO)	Main Belt Asteroid	1.902	1.902	1.902	14.2	7.4	3.8				1				1.93	1.95	3.76	-
3181 Ahnert (1964 EC)	Main Belt Asteroid	2.372	2.345	2.368	43.4	22.8	11.6	0.1	0.1	0.1	4	426.3	177.4	92.6	1.90	1.97	3.75	5
3204 Lindgren (1978 RH)	Main Belt Asteroid	2.709	2.309	2.682	60.0	31.8	16.2	1.5	0.8	0.4	4	39.6	40.6	46.2	1.89	1.96	3.70	-
3213 Smolensk (1977 NQ)	Main Belt Asteroid	2.744	2.738	2.741	49.7	26.3	13.0	0.2	0.2	0.0	2	262.8	123.3	273.5	1.89	2.02	3.83	-
3215 Lapko (1980 BQ)	Main Belt Asteroid	2.969	2.969	2.969	53.4	28.0	14.0				1				1.90	2.00	3.81	-
3222 Liller (1983 NJ)	Main Belt Asteroid	3.168	3.161	3.168	108.7	57.3	28.9	0.2	0.3	0.2	3	472.0	200.7	182.9	1.90	1.98	3.76	-
3229 Solnhofen (A916 PC)	Main Belt Asteroid	2.612	2.611	2.612	34.7	18.3	9.4	0.2	0.0	0.0	8	225.9	462.7	462.7	1.90	1.95	3.71	-
3232 Brest (1974 SL)	Main Belt Asteroid	2.984	2.964	2.974	92.6	49.0	24.5	0.3	0.2	0.2	6	269.4	234.5	107.9	1.89	2.00	3.78	-
3240 Laocoon (1978 VG6)	Jupiter Trojan	4.825	4.685	4.691	273.4	146.9	74.7	2.1	1.0	0.6	4	133.3	151.5	133.2	1.86	1.97	3.66	-
3269 Vibert-Douglas (1981 EX16)	Main Belt Asteroid	2.337	2.337	2.337	43.8	23.2	11.5	0.1	0.2	0.2	3	331.4	130.7	53.5	1.88	2.03	3.82	-
3280 Gretry (1933 SJ)	Main Belt Asteroid	2.170	2.170	2.170	55.4	29.2	14.6				1				1.90	2.00	3.79	-

3291 Dunlap (1982 VX3)	Main Belt Asteroid	2.847	2.847	2.847	41.0	21.6	10.8	0.1	0.0	0.0	4	447.4	447.4	447.4	1.89	2.00	3.79	-
3297 Hong Kong (1978 WN14)	Main Belt Asteroid	2.594	2.590	2.591	55.8	29.6	15.0	0.3	0.2	0.2	6	215.6	168.1	76.5	1.88	1.97	3.72	-
3305 Ceadams (1985 KB)	Main Belt Asteroid	2.718	2.675	2.716	60.7	31.9	16.2	0.3	0.3	0.1	5	215.3	119.5	139.0	1.90	1.97	3.74	-
3308 Ferreri (1981 EP)	Main Belt Asteroid	3.122	2.767	3.087	109.6	57.9	29.4	1.9	1.1	0.5	5	58.6	53.7	54.9	1.89	1.97	3.73	-
3313 Mendel (1980 DG)	Main Belt Asteroid	2.600	2.600	2.600	62.0	32.6	16.3				1				1.90	2.00	3.80	-
3314 Beals (1981 FH)	Main Belt Asteroid	2.169	2.119	2.160	33.8	17.6	9.0	0.4	0.2	0.1	5	91.2	75.9	140.2	1.92	1.97	3.77	S
3324 Avsyuk (1983 CW1)	Main Belt Asteroid	2.755	2.755	2.755	80.0	42.9	21.5				1				1.86	2.00	3.73	-
3328 Interposita (1985 QD1)	Main Belt Asteroid	2.737	2.737	2.737	118.7	62.8	31.9				1				1.89	1.97	3.72	-
3329 Golay (1985 RT1)	Main Belt Asteroid	2.834	2.807	2.815	113.5	60.2	30.2	0.5	0.4	0.3	6	217.0	161.9	115.4	1.89	1.99	3.75	-
3332 Raksha (1978 NT1)	Main Belt Asteroid	2.331	2.331	2.331	120.3	63.6	32.1				1				1.89	1.98	3.75	-
3341 Hartmann (1980 OD)	Main Belt Asteroid	2.357	2.317	2.317	63.1	33.1	16.6	0.7	0.5	0.4	6	86.0	68.1	46.5	1.91	2.00	3.81	-
3351 Smith (1980 RN1)	Main Belt Asteroid	2.365	2.248	2.307	33.3	17.5	8.8	0.3	0.2	0.1	2	124.5	71.3	71.3	1.90	2.00	3.80	-
3357 Tolstikov (1984 FT)	Main Belt Asteroid	3.117	3.107	3.108	81.6	43.1	21.7	0.0	0.2	0.2	3	2843.7	235.0	116.2	1.89	1.98	3.75	-
3366 Godel (1985 SD1)	Main Belt Asteroid	2.880	2.852	2.871	112.9	59.8	30.2	0.3	0.2	0.3	7	442.8	250.0	115.9	1.89	1.98	3.74	-
3382 Cassidy (1948 RD)	Main Belt Asteroid	1.837	1.832	1.837	35.8	18.9	9.5	0.2	0.2	0.2	3	236.2	93.0	63.2	1.89	1.98	3.76	-
3385 Bronnina (1979 SK11)	Main Belt Asteroid	2.277	2.189	2.193	58.7	31.1	15.4	0.4	0.3	0.1	4	144.6	116.0	114.1	1.89	2.02	3.82	S
3393 Stur (1984 WY1)	Main Belt Asteroid	2.488	2.488	2.488	51.6	27.4	13.9				1				1.89	1.97	3.72	-
3403 Tammy (1981 SW)	Main Belt Asteroid	2.287	2.287	2.287	33.5	17.8	8.9				1				1.89	2.00	3.77	-
3430 Bradfield (1980 TF4)	Main Belt Asteroid	2.609	2.499	2.501	46.5	24.6	12.4	0.2	0.2	0.1	4	251.9	126.6	167.7	1.89	1.99	3.76	Sq
3433 Fehrenbach (1963 TJ1)	Main Belt Asteroid	1.965	1.947	1.950	46.2	24.3	12.1	0.4	0.2	0.1	6	132.1	152.4	83.1	1.91	2.01	3.82	-
3442 Yashin (1978 TO7)	Main Belt Asteroid	2.872	2.872	2.872	102.0	54.3	27.1				1				1.88	2.00	3.76	-
3451 Mentor (1984 HA1)	Jupiter Trojan	4.957	4.849	4.950	1397.8	749.9	381.7	15.4	8.2	3.8	14	90.6	91.2	101.1	1.86	1.96	3.66	X
3458 Boduognat (1985 RT3)	Main Belt Asteroid	2.430	2.430	2.430	43.4	23.0	11.7				1				1.89	1.97	3.71	Sl
3474 Linsley (1962 HE)	Main Belt Asteroid	2.355	2.355	2.355	35.7	18.8	9.6				1				1.90	1.95	3.71	Sa
3478 Fanale (1979 XG)	Main Belt Asteroid	2.038	1.959	1.973	41.5	21.8	10.9	0.1	0.1	0.1	8	316.6	222.5	118.9	1.90	2.00	3.79	-
3482 Lesnaya (1975 VY4)	Main Belt Asteroid	2.334	2.334	2.334	59.6	31.3	15.6				1				1.90	2.00	3.81	-
3491 Fridolin (1984 SM4)	Main Belt Asteroid	2.705	2.552	2.696	60.1	31.8	15.9	0.7	0.4	0.2	4	87.4	78.4	91.9	1.89	2.00	3.77	Sq
3492 Petra-Pepi (1985 DQ)	Main Belt Asteroid	2.943	2.727	2.788	85.3	45.0	22.8	0.8	0.5	0.2	14	101.8	91.1	100.6	1.90	1.98	3.75	-
3494 Purple Mountain (1980 XW)	Main Belt Asteroid	2.293	2.065	2.072	41.1	21.6	10.9	0.5	0.3	0.1	4	89.3	69.0	111.3	1.90	1.98	3.77	-
3495 Colchagua (1981 NU)	Main Belt Asteroid	3.608	3.607	3.607	86.1	45.8	23.5	0.3	0.1	0.1	2	310.1	310.1	310.1	1.88	1.95	3.67	-
3509 Sanshui (1978 UH2)	Main Belt Asteroid	2.212	2.207	2.212	72.9	38.6	19.6	0.6	0.3	0.2	3	128.7	120.4	111.0	1.89	1.97	3.72	-

3516 Rusheva (1982 UH7)	Main Belt Asteroid	2.671	2.665	2.670	50.3	26.6	13.2	0.1	0.2	0.2	5	366.1	134.6	55.2	1.89	2.01	3.80	-
3566 Levitan (1979 YA9)	Main Belt Asteroid	2.295	2.294	2.294	30.3	16.1	8.0	0.1	0.1	0.2	2	349.1	253.9	46.1	1.88	2.00	3.77	B
3569 Kumon (1938 DN1)	Main Belt Asteroid	2.512	2.480	2.496	51.6	27.3	13.6	0.3	0.1	0.1	5	167.0	189.2	189.2	1.89	2.00	3.78	-
3574 Rudaux (1982 TQ)	Main Belt Asteroid	2.019	2.019	2.019	18.5	9.6	4.9				1				1.93	1.95	3.77	-
3582 Cyrano (1986 TT5)	Main Belt Asteroid	2.913	2.793	2.899	93.1	49.1	24.8	0.4	0.4	0.3	5	213.9	118.1	95.5	1.90	1.98	3.75	-
3591 Vladimirsij (1978 QJ2)	Main Belt Asteroid	3.207	2.989	2.989	57.6	30.2	15.0	0.5	0.3	0.2	3	106.8	93.7	66.8	1.91	2.01	3.84	-
3595 Gallagher (1985 TF1)	Main Belt Asteroid	2.406	2.406	2.406	36.0	19.2	9.6	0.2	0.1	0.2	2	224.8	224.8	50.1	1.88	2.00	3.76	-
3598 Saucier (1977 KK1)	Main Belt Asteroid	3.187	3.187	3.187	56.4	29.7	15.2				1				1.90	1.95	3.70	-
3613 Kunlun (1982 VJ11)	Main Belt Asteroid	2.406	2.406	2.406	32.9	17.3	8.9	0.1	0.1	0.0	2	524.4	236.5	236.5	1.90	1.95	3.70	-
3620 Platonov (1981 RU2)	Main Belt Asteroid	2.669	2.669	2.669	50.4	26.6	13.5				1				1.90	1.96	3.72	-
3625 Fracastoro (1984 HZ1)	Main Belt Asteroid	2.775	2.707	2.708	124.2	65.8	33.3	0.3	0.2	0.2	4	438.9	324.4	140.1	1.89	1.98	3.73	-
3628 Boznemcova (1979 WD)	Main Belt Asteroid	2.033	1.924	1.996	38.1	20.1	10.1	0.1	0.1	0.1	7	342.0	177.9	137.0	1.89	2.00	3.79	O
3639 Weidenschilling (1985 TX)	Main Belt Asteroid	2.161	2.161	2.161	25.6	13.6	6.9	0.1	0.1	0.0	2	455.4	122.8	221.5	1.89	1.97	3.72	-
3647 Dermott (1986 AD1)	Main Belt Asteroid	2.581	2.522	2.525	106.7	56.3	28.4	0.4	0.3	0.1	5	247.8	212.8	194.2	1.90	1.98	3.76	B
3650 Kunming (1978 UO2)	Main Belt Asteroid	2.686	2.606	2.660	97.6	51.6	26.0	0.4	0.2	0.2	6	220.1	236.3	130.0	1.89	1.98	3.75	-
3658 Feldman (1982 TR)	Main Belt Asteroid	2.053	2.053	2.053	21.6	11.4	5.7				1				1.90	2.00	3.80	S
3675 Kemstach (1982 YP1)	Main Belt Asteroid	3.645	3.634	3.639	136.6	72.1	36.8	1.4	0.8	0.4	3	98.9	95.6	85.9	1.89	1.96	3.72	-
3701 Purkyne (1985 DW)	Main Belt Asteroid	2.539	2.538	2.539	46.9	24.6	12.6	0.3	0.1	0.0	3	187.1	204.5	254.6	1.90	1.96	3.73	S
3708 (1974 FV1)	Jupiter Trojan	4.381	4.380	4.380	778.5	416.3	212.1	2.6	0.9	0.7	2	303.2	463.6	307.8	1.87	1.96	3.67	-
3727 Maxhell (1981 PQ)	Main Belt Asteroid	2.922	2.922	2.922	113.6	60.7	30.4				1				1.87	2.00	3.74	-
3772 Piaf (1982 UR7)	Main Belt Asteroid	2.837	2.837	2.837	137.2	72.5	36.7				1				1.89	1.97	3.74	-
3779 Kieffer (1985 JV1)	Main Belt Asteroid	2.908	2.908	2.908	110.5	58.9	29.8				1				1.88	1.98	3.71	-
3792 Preston (1985 FA)	Main Belt Asteroid	2.016	1.984	2.000	26.3	13.8	6.9	0.0	0.1	0.1	4	664.4	147.5	85.2	1.91	1.99	3.79	S
3799 Novgorod (1979 SL9)	Main Belt Asteroid	2.989	2.963	2.965	57.7	30.5	15.3	0.1	0.3	0.1	3	839.1	112.1	112.1	1.89	2.00	3.78	-
3816 Chugainov (1975 VG9)	Main Belt Asteroid	2.932	2.932	2.932	92.1	48.8	24.4				1				1.89	2.00	3.78	-
3835 Korolenko (1977 SD3)	Main Belt Asteroid	2.419	2.419	2.419	58.3	31.0	15.5				1				1.88	2.00	3.76	-
3837 Carr (1981 JU2)	Main Belt Asteroid	2.314	2.303	2.304	33.1	17.5	8.6	0.1	0.1	0.1	3	264.9	130.3	128.9	1.89	2.03	3.84	-
3852 Glennford (1987 DR6)	Main Belt Asteroid	2.594	2.528	2.592	61.9	33.0	16.3	0.2	0.2	0.2	3	319.2	137.2	83.6	1.88	2.03	3.80	-
3858 Dorchester (1986 TG)	Mars Crossing Asteroid	1.675	1.662	1.675	17.1	9.0	4.5	0.1	0.0	0.0	4	322.4	312.9	139.6	1.91	2.00	3.82	Sa
3874 Stuart (1986 TJ1)	Main Belt Asteroid	2.712	2.712	2.712	45.1	24.1	11.7				1				1.87	2.05	3.84	-
3879 Machar (1983 QA)	Main Belt Asteroid	1.857	1.830	1.843	26.9	14.1	7.1	0.1	0.0	0.0	2	363.0	765.9	175.8	1.91	1.99	3.79	-

3882 Johncox (1962 RN)	Main Belt Asteroid	2.625	2.625	2.625	32.4	17.1	8.8				1				1.90	1.95	3.70	-
3885 Bogorodskij (1979 HG5)	Main Belt Asteroid	2.584	2.584	2.584	34.7	18.3	9.2				1				1.89	2.00	3.79	Cg
3896 Pordenone (1987 WB)	Main Belt Asteroid	2.872	2.872	2.872	123.1	65.3	32.9	0.2	0.1	0.1	8	627.9	497.1	497.1	1.89	1.98	3.74	-
3899 Wichterle (1982 SN1)	Main Belt Asteroid	3.255	3.255	3.255	117.2	61.7	30.8				1				1.90	2.00	3.80	-
3903 Kliment Ohridski (1987 SV2)	Main Belt Asteroid	2.936	2.783	2.784	65.1	34.3	17.4	8.0	4.4	2.3	5	8.1	7.7	7.5	1.90	1.96	3.73	Sq
3915 Fukushima (1988 PA1)	Main Belt Asteroid	2.405	2.389	2.400	63.5	33.6	17.0	0.5	0.2	0.2	6	123.5	160.8	81.8	1.89	1.98	3.74	-
3920 Aubignan (1948 WF)	Mars Crossing Asteroid	1.737	1.737	1.737	32.5	17.2	8.5				1				1.89	2.02	3.83	Sa
3958 Komendantov (1953 TC)	Main Belt Asteroid	1.983	1.956	1.961	62.1	32.7	16.4	0.9	0.4	0.2	6	72.4	73.5	77.3	1.90	1.99	3.79	Xc
3970 Herran (1979 ME9)	Main Belt Asteroid	2.279	2.241	2.253	58.8	31.1	15.6	1.1	0.5	0.3	3	54.2	63.6	52.2	1.89	2.00	3.78	-
3971 Voronikhin (1979 YM8)	Main Belt Asteroid	2.373	2.373	2.373	145.3	76.6	38.6				1				1.90	1.98	3.76	Ch
3985 Raybatson (1985 CX)	Main Belt Asteroid	3.071	3.070	3.071	122.0	64.8	32.5	0.3	0.3	0.1	3	470.5	191.0	294.5	1.88	1.99	3.75	X
3986 Rozhkovskij (1985 SF2)	Main Belt Asteroid	2.331	2.067	2.199	36.9	19.3	9.7	0.7	0.4	0.2	2	50.8	48.9	48.9	1.91	2.00	3.82	-
4041 Miyamotoyohko (1988 DN1)	Main Belt Asteroid	3.105	3.089	3.100	145.8	77.3	39.0	0.6	0.4	0.2	5	225.6	190.7	171.2	1.89	1.98	3.73	-
4045 Lowengrub (1953 RG)	Main Belt Asteroid	3.134	3.110	3.122	143.6	76.3	38.6	0.7	0.4	0.3	5	208.3	174.4	118.5	1.88	1.98	3.72	-
4049 Noragal' (1973 QD2)	Main Belt Asteroid	2.822	2.784	2.803	54.8	28.8	14.6	0.4	0.2	0.1	4	144.4	145.5	101.9	1.90	1.97	3.75	-
4076 Dorffel (1982 UF4)	Main Belt Asteroid	2.654	2.649	2.651	60.7	32.1	16.1	0.2	0.1	0.2	6	281.9	218.9	79.6	1.89	2.00	3.78	-
4078 Polakis (1983 AC)	Main Belt Asteroid	2.714	2.714	2.714	149.9	79.7	39.8				1				1.88	2.00	3.76	-
4093 Bennett (1986 VD)	Main Belt Asteroid	3.007	3.007	3.007	52.9	27.8	14.2				1				1.90	1.95	3.71	-
4100 Sumiko (1988 BF)	Main Belt Asteroid	2.824	2.695	2.815	93.7	49.8	25.2	0.6	0.3	0.3	4	144.7	148.0	78.5	1.88	1.98	3.72	-
4107 Rufino (1989 GT)	Main Belt Asteroid	2.270	2.268	2.269	70.7	37.2	18.5	0.1	0.2	0.2	3	543.1	233.6	91.0	1.90	2.01	3.82	C
4110 Keats (1977 CZ)	Main Belt Asteroid	3.275	3.275	3.275	73.9	39.5	20.1				1				1.87	1.96	3.67	-
4121 Carlin (1986 JH)	Main Belt Asteroid	1.936	1.936	1.936	42.0	22.1	11.0				1				1.91	2.00	3.81	-
4122 Ferrari (1986 OA)	Main Belt Asteroid	2.687	2.686	2.686	73.5	38.9	19.6	0.4	0.1	0.3	4	193.3	290.3	69.6	1.89	1.98	3.75	-
4142 Dersu-Uzala (1981 KE)	Mars Crossing Asteroid	1.780	1.736	1.757	32.5	17.1	8.6	0.1	0.1	0.1	6	219.7	167.2	81.6	1.90	1.99	3.78	A
4158 Santini (1989 BE)	Main Belt Asteroid	3.436	3.436	3.436	86.9	46.8	23.4				1				1.86	2.00	3.71	-
4159 Freeman (1989 GK)	Main Belt Asteroid	2.575	2.575	2.575	153.2	81.2	40.6				1				1.89	2.00	3.77	-
4167 Riemann (1978 TQ7)	Main Belt Asteroid	2.696	2.676	2.686	80.0	42.4	21.2	0.4	0.3	0.1	5	211.0	150.9	150.9	1.89	2.00	3.77	-
4170 Semmelweis (1980 PT)	Main Belt Asteroid	3.013	2.855	2.856	101.0	53.8	26.9	10.5	5.6	2.4	5	9.6	9.6	11.0	1.88	2.00	3.76	-
4176 Sudek (1987 DS)	Main Belt Asteroid	3.240	3.023	3.240	66.9	35.6	18.3	1.2	0.6	0.1	4	56.4	57.9	150.2	1.88	1.95	3.67	-
4177 Kohman (1987 SS1)	Main Belt Asteroid	2.376	2.376	2.376	32.9	17.4	8.7				1				1.89	2.00	3.79	-
4181 Kivi (1938 DK1)	Main Belt Asteroid	2.724	2.724	2.724	49.3	26.0	13.0	0.0	0.0	0.0	2	2963.5	2963.5	2963.5	1.89	2.00	3.79	-

4183 Cuno (1959 LM)	Near Earth Object	1.350	1.350	1.350	8.3	4.3	2.2				1				1.92	2.00	3.83	Sq
4188 Kitezh (1979 HX4)	Main Belt Asteroid	2.058	2.020	2.047	31.2	16.5	8.2	0.1	0.0	0.1	4	208.3	404.5	133.9	1.89	2.00	3.79	V
4192 Breysacher (1981 DH)	Main Belt Asteroid	2.688	2.688	2.688	79.4	42.1	21.0				1				1.89	2.00	3.77	-
4222 Nancita (1988 EK1)	Main Belt Asteroid	2.132	2.067	2.127	59.5	31.6	15.8	0.1	0.1	0.1	3	592.0	243.7	144.2	1.89	1.99	3.75	S
4260 Yanai (1989 AX)	Main Belt Asteroid	2.702	2.695	2.696	55.0	29.0	14.9	0.2	0.1	0.0	3	307.1	554.9	357.6	1.90	1.95	3.70	-
4287 Trisov (1989 RU2)	Main Belt Asteroid	2.081	1.798	1.799	22.2	11.6	5.9	5.2	2.9	1.5	5	4.3	4.0	3.9	1.91	1.99	3.79	S
4293 Masumi (1989 VT)	Main Belt Asteroid	2.478	2.421	2.448	68.4	36.1	18.0	0.5	0.3	0.2	6	126.9	129.7	78.3	1.89	2.00	3.79	-
4300 Marg Edmondson (1955 SG1)	Main Belt Asteroid	2.160	2.160	2.160	26.1	13.7	6.8				1				1.90	2.00	3.81	-
4332 Milton (1983 RC)	Main Belt Asteroid	1.813	1.813	1.813	38.7	20.3	10.3				1				1.90	1.98	3.76	Xe
4348 Poulydamas (1988 RU)	Jupiter Trojan	4.819	4.744	4.744	522.9	280.2	142.6	3.6	1.6	1.2	9	144.4	172.4	120.6	1.87	1.96	3.67	-
4368 Pillmore (1981 JC2)	Main Belt Asteroid	3.137	3.137	3.137	110.9	58.5	29.3				1				1.90	2.00	3.79	-
4379 Snelling (1988 PT1)	Main Belt Asteroid	2.795	2.785	2.789	86.1	45.8	23.2	0.1	0.1	0.2	5	793.3	411.8	101.4	1.88	1.97	3.71	-
4387 Tanaka (4829 T-2)	Main Belt Asteroid	2.456	2.456	2.456	39.4	20.5	10.5				1				1.92	1.95	3.75	S
4417 Lecar (1931 GC)	Main Belt Asteroid	2.861	2.861	2.861	71.0	37.7	18.8				1				1.89	2.00	3.77	S
4457 van Gogh (1989 RU)	Main Belt Asteroid	2.883	2.858	2.871	71.0	37.6	19.2	0.5	0.2	0.1	6	137.3	197.4	166.8	1.89	1.96	3.70	-
4461 Sayama (1990 EL)	Main Belt Asteroid	2.926	2.925	2.925	123.0	65.2	32.9	0.2	0.2	0.1	3	495.4	278.6	250.6	1.89	1.98	3.74	X
4467 Kaidanovskij (1975 VN2)	Main Belt Asteroid	2.258	2.258	2.258	58.1	30.8	15.7				1				1.88	1.96	3.69	-
4492 Debussy (1988 SH)	Main Belt Asteroid	2.279	2.272	2.275	33.4	17.6	8.8	0.1	0.2	0.1	2	381.9	91.2	91.2	1.90	2.00	3.79	-
4502 Elizabethann (1989 KG)	Main Belt Asteroid	2.873	2.743	2.865	85.2	45.2	22.7	0.6	0.4	0.2	5	148.3	111.9	96.7	1.89	1.99	3.75	-
4512 Sínuhe (1939 BM)	Main Belt Asteroid	2.533	2.504	2.519	97.7	51.5	25.9	0.2	0.1	0.2	4	439.1	797.7	158.2	1.90	1.99	3.77	Sa
4545 Primolevi (1989 SB11)	Main Belt Asteroid	3.039	3.039	3.039	57.7	30.3	15.5				1				1.90	1.95	3.71	-
4573 Piestany (1986 TP6)	Main Belt Asteroid	3.237	3.237	3.237	89.2	47.1	23.9				1				1.89	1.97	3.72	-
4580 Child (1989 EF)	Main Belt Asteroid	2.905	2.894	2.899	58.3	31.2	15.6	0.1	0.1	0.0	2	508.4	508.4	508.4	1.87	2.00	3.74	-
4598 Coradini (1985 PG1)	Main Belt Asteroid	2.678	2.677	2.678	55.3	29.3	14.6	0.2	0.2	0.2	2	229.1	117.7	69.5	1.89	2.00	3.78	-
4608 Wodehouse (1988 BW3)	Main Belt Asteroid	2.180	1.847	2.155	33.8	17.8	9.0	0.8	0.4	0.2	4	42.8	42.0	43.3	1.90	1.98	3.76	-
4613 Mamoru (1990 OM)	Main Belt Asteroid	2.080	2.027	2.054	105.1	55.3	27.8	0.5	0.4	0.1	2	227.4	135.8	290.4	1.90	1.99	3.78	-
4615 Zinner (A923 RH)	Main Belt Asteroid	2.310	2.276	2.293	63.9	33.7	16.9	0.4	0.2	0.2	5	159.1	173.6	72.8	1.90	2.00	3.79	-
4644 Oumu (1990 SR3)	Main Belt Asteroid	2.744	2.744	2.744	49.6	26.2	13.1				1				1.89	2.00	3.79	-
4645 Tentaikojo (1990 SP4)	Main Belt Asteroid	2.558	2.558	2.558	39.1	20.5	10.2				1				1.91	2.00	3.83	-
4648 Tirion (1931 UE)	Main Belt Asteroid	2.018	2.018	2.018	24.0	12.6	6.3				1				1.90	2.00	3.80	-
4679 Sybil (1990 TR4)	Main Belt Asteroid	2.937	2.933	2.935	63.9	33.9	17.3	0.2	0.2	0.1	4	260.2	165.1	202.5	1.88	1.96	3.69	-

4683 Veratar (1976 GJ1)	Main Belt Asteroid	2.930	2.930	2.930	58.6	31.0	15.5					1				1.89	2.00	3.78	-
4694 Festou (1985 PM)	Main Belt Asteroid	2.425	2.210	2.318	39.8	20.8	10.6	0.3	0.3	0.1		2	123.1	68.8	110.2	1.91	1.96	3.75	-
4695 Mediolanum (1985 RU3)	Main Belt Asteroid	2.556	2.516	2.517	83.0	43.6	22.1	0.9	0.5	0.4		5	90.5	87.8	55.1	1.90	1.97	3.75	-
4707 Khryses (1988 PY)	Jupiter Trojan	4.583	4.537	4.579	231.1	123.8	62.7	0.9	0.6	0.5		4	266.3	195.6	138.1	1.87	1.97	3.69	-
4715 (1989 TS1)	Jupiter Trojan	4.862	4.851	4.851	468.7	251.5	127.0	0.8	0.5	0.7		4	590.8	553.5	169.6	1.86	1.98	3.69	-
4716 Urey (1989 UL5)	Main Belt Asteroid	3.386	3.386	3.386	87.6	46.9	23.4					1				1.87	2.00	3.74	-
4722 Agelaos (4271 T-3)	Jupiter Trojan	4.746	4.735	4.745	327.4	175.4	88.3	0.4	0.7	0.3		3	728.8	263.7	265.8	1.87	1.99	3.71	-
4725 Milone (1975 YE)	Main Belt Asteroid	2.287	2.287	2.287	69.7	36.7	18.3					1				1.90	2.00	3.80	-
4726 Federer (1976 SV10)	Main Belt Asteroid	2.721	2.721	2.721	38.2	19.9	9.9					1				1.92	2.00	3.84	L
4730 Xingmingzhou (1980 XZ)	Main Belt Asteroid	3.020	3.020	3.020	119.9	63.5	32.1					1				1.89	1.98	3.74	-
4732 Froeschle (1981 JG)	Main Belt Asteroid	2.952	2.947	2.949	122.5	64.9	32.9	0.5	0.4	0.3		5	242.3	158.3	106.3	1.89	1.97	3.72	-
4738 Jimihendrix (1985 RZ4)	Main Belt Asteroid	2.337	2.337	2.337	44.2	23.2	11.9					1				1.91	1.95	3.73	-
4744 Rovereto (1988 RF5)	Main Belt Asteroid	3.231	3.231	3.231	74.2	39.7	19.8					1				1.87	2.00	3.74	D
4746 Doi (1989 TP1)	Main Belt Asteroid	2.830	2.677	2.754	59.4	31.4	16.0	0.8	0.6	0.3		2	70.5	50.6	62.0	1.89	1.96	3.71	-
4748 Tokiwagozen (1989 WV)	Main Belt Asteroid	2.792	2.791	2.792	105.0	55.9	27.9	0.2	0.2	0.1		3	498.6	280.1	280.1	1.88	2.00	3.76	S
4754 Panthoos (5010 T-3)	Jupiter Trojan	5.179	5.166	5.172	313.8	169.2	85.8	2.3	0.9	0.7		16	133.8	189.5	120.6	1.86	1.97	3.66	-
4762 Dobrynya (1982 SC6)	Main Belt Asteroid	2.030	2.030	2.030	19.8	10.5	5.2					1				1.89	2.00	3.79	-
4771 Hayashi (1989 RM2)	Main Belt Asteroid	2.399	2.380	2.390	43.7	22.9	11.4	0.0	0.1	0.0		2	596258.2	250.9	250.9	1.91	2.00	3.82	-
4772 Frankdrake (1989 VM)	Main Belt Asteroid	2.963	2.955	2.957	77.8	41.1	20.9	0.8	0.4	0.3		7	95.6	109.2	71.5	1.89	1.96	3.72	-
4792 Lykaon (1988 RK1)	Jupiter Trojan	4.804	4.778	4.779	326.5	175.2	88.4	1.3	0.8	0.6		4	246.3	222.5	156.5	1.86	1.98	3.70	-
4808 Ballaero (1925 BA)	Main Belt Asteroid	2.772	2.772	2.772	59.6	31.6	15.8					1				1.89	2.00	3.77	-
4817 Gliiba (1984 DC1)	Main Belt Asteroid	1.859	1.858	1.858	15.4	8.1	4.0	0.0	0.0	0.0		2	474.6	208.8	208.8	1.91	2.00	3.82	SI
4827 Dares (1988 QE)	Jupiter Trojan	5.003	4.947	5.000	221.4	119.4	60.5	1.5	0.8	0.8		4	149.6	147.3	75.5	1.85	1.97	3.66	-
4828 Misenus (1988 RV)	Jupiter Trojan	5.347	5.343	5.347	213.6	114.8	58.9	1.1	0.5	1.0		3	201.4	213.8	59.8	1.86	1.95	3.63	-
4832 Palinurus (1988 TU1)	Jupiter Trojan	4.546	4.532	4.546	365.5	195.6	98.8	2.9	1.0	1.1		4	127.2	193.1	86.7	1.87	1.98	3.70	-
4839 Daisetsuzan (1989 QG)	Main Belt Asteroid	2.303	2.303	2.303	30.6	16.1	8.2					1				1.90	1.96	3.73	Xc
4840 Otaynang (1989 UY)	Main Belt Asteroid	3.054	3.054	3.054	85.3	44.9	23.0					1				1.90	1.95	3.70	-
4848 Tutenchamun (3233 T-2)	Main Belt Asteroid	3.213	2.993	3.103	68.4	36.4	18.2	1.0	0.9	0.0		2	71.0	39.6	699.8	1.88	2.00	3.76	-
4867 Polites (1989 SZ)	Jupiter Trojan	5.177	5.174	5.176	415.1	223.2	113.7	1.8	1.7	0.3		2	234.2	131.0	452.4	1.86	1.96	3.65	-
4875 Ingalls (1991 DJ)	Main Belt Asteroid	1.881	1.881	1.881	29.2	15.4	7.6					1				1.90	2.02	3.84	-
4907 Zoser (7618 P-L)	Main Belt Asteroid	3.013	3.013	3.013	57.8	30.4	15.6					1				1.90	1.95	3.70	-

4935 Maslachkova (1985 PD2)	Main Belt Asteroid	1.880	1.880	1.880	24.2	12.8	6.3				1				1.89	2.05	3.86	-
4962 Vecherka (1973 TP)	Main Belt Asteroid	2.369	2.368	2.368	57.6	30.5	15.3	0.1	0.0	0.1	2	632.7	703.2	129.7	1.89	1.99	3.76	-
4963 Kanroku (1977 DR1)	Main Belt Asteroid	2.656	2.317	2.333	82.6	43.5	21.9	1.4	0.7	0.4	4	57.4	66.4	53.5	1.90	1.99	3.77	-
4973 Showa (1990 FT)	Main Belt Asteroid	3.600	3.492	3.546	102.4	55.0	27.5	0.9	0.3	0.2	2	117.9	159.5	159.5	1.86	2.00	3.72	-
4976 Choukyongchol (1991 PM)	Main Belt Asteroid	3.289	3.289	3.289	106.5	56.9	28.5	0.2	0.3	0.1	8	467.3	175.1	558.0	1.87	2.00	3.74	-
5008 Miyazawakenji (1991 DV)	Main Belt Asteroid	2.340	2.335	2.337	36.1	18.9	9.5	0.2	0.0	0.0	2	165.6	382.1	382.1	1.91	2.00	3.81	S
5023 Agapenor (1985 TG3)	Jupiter Trojan	5.131	5.131	5.131	239.5	129.6	64.8				1				1.85	2.00	3.70	-
5029 Ireland (1988 BL2)	Main Belt Asteroid	2.684	2.675	2.684	60.8	32.2	16.1	0.2	0.2	0.3	5	324.0	141.4	63.8	1.89	2.00	3.79	-
5034 Joeharrington (1991 PW10)	Main Belt Asteroid	1.977	1.977	1.977	18.1	9.5	4.8				1				1.89	2.00	3.79	-
5035 Swift (1991 UX)	Main Belt Asteroid	2.623	2.465	2.606	55.3	29.2	14.8	0.5	0.3	0.0	12	121.2	86.3	298.7	1.90	1.96	3.72	-
5080 Oja (1976 EB)	Main Belt Asteroid	2.091	2.075	2.075	42.9	22.6	11.3	0.4	0.2	0.0	3	115.5	95.1	594.5	1.89	1.99	3.78	-
5081 Sanguin (1976 WC1)	Main Belt Asteroid	2.461	2.461	2.461	42.8	22.8	11.7				1				1.88	1.95	3.67	Ch
5092 Manara (1982 FJ)	Main Belt Asteroid	3.303	3.303	3.303	89.0	46.8	23.4				1				1.90	2.00	3.80	-
5105 Westerhout (1986 TM1)	Main Belt Asteroid	2.192	2.185	2.188	64.3	33.9	17.1	0.1	0.1	0.1	6	583.1	274.0	226.4	1.90	1.99	3.77	-
5107 Laurenbacall (1987 DS6)	Main Belt Asteroid	3.040	3.040	3.040	63.2	33.2	16.6				1				1.90	2.00	3.81	-
5119 (1988 RA1)	Jupiter Trojan	4.661	4.661	4.661	276.1	149.3	74.6				1				1.85	2.00	3.70	-
5128 Wakabayashi (1989 FJ)	Main Belt Asteroid	2.367	2.367	2.367	36.4	19.1	9.6				1				1.90	2.00	3.80	-
5140 Kida (1990 XH)	Main Belt Asteroid	2.928	2.813	2.919	101.0	53.4	27.1	1.1	0.4	0.3	4	94.9	138.2	87.5	1.89	1.97	3.73	-
5144 Achates (1991 XX)	Jupiter Trojan	4.730	4.324	4.527	848.4	453.4	230.3	21.0	11.3	5.4	2	40.4	40.0	42.8	1.87	1.97	3.68	-
5153 Gierasch (1940 GO)	Main Belt Asteroid	2.784	2.736	2.737	80.0	42.1	21.0	0.7	0.3	0.1	4	121.6	125.5	309.6	1.90	2.01	3.82	-
5167 Joeharms (1985 GU1)	Main Belt Asteroid	2.567	2.181	2.207	63.6	33.4	16.9	1.2	0.6	0.4	3	50.9	57.1	43.9	1.90	1.98	3.77	-
5183 Robyn (1990 OA1)	Main Belt Asteroid	2.724	2.724	2.724	55.0	28.9	14.8				1				1.90	1.95	3.71	-
5185 Alerossi (1990 RV2)	Main Belt Asteroid	2.510	2.510	2.510	42.9	22.4	11.4				1				1.92	1.96	3.76	-
5192 Yabuki (1991 CC)	Main Belt Asteroid	2.942	2.942	2.942	218.1	115.1	58.1				1				1.90	1.98	3.75	-
5193 Tanakawataru (1992 ET)	Main Belt Asteroid	3.318	3.080	3.317	66.5	35.5	18.2	1.0	0.5	0.2	4	65.5	66.0	75.5	1.87	1.95	3.65	-
5208 Royer (1989 CH1)	Main Belt Asteroid	2.701	2.701	2.701	41.3	22.1	11.0	0.1	0.0	0.0	4	498.8	498.8	498.8	1.87	2.00	3.74	S
5229 Irurita (1987 DE6)	Main Belt Asteroid	2.803	2.803	2.803	45.0	23.4	12.0				1				1.92	1.95	3.75	-
5241 Beeson (1990 YL)	Main Belt Asteroid	2.808	2.808	2.808	49.7	26.2	13.4				1				1.90	1.95	3.70	-
5275 Zdislava (1986 UU)	Mars Crossing Asteroid	1.816	1.688	1.752	15.6	8.2	4.1	0.0	0.1	0.0	2	357.5	135.7	848.5	1.90	2.02	3.83	Sa
5279 Arthuradel (1988 LA)	Main Belt Asteroid	1.983	1.858	1.968	45.5	24.0	12.0	0.5	0.2	0.2	8	88.0	98.3	58.4	1.90	2.00	3.79	-
5299 Bittesini (1969 LB)	Main Belt Asteroid	2.914	2.914	2.914	63.9	34.0	17.0				1				1.88	2.00	3.76	-

5317 Verolacqua (1983 CE)	Main Belt Asteroid	2.868	2.868	2.868	59.0	31.1	15.5				1				1.90	2.00	3.80	-
5319 Petrovskaya (1985 RK6)	Main Belt Asteroid	1.979	1.979	1.979	19.8	10.5	5.1				1				1.88	2.05	3.85	-
5349 Paulharris (1988 RA)	Mars Crossing Asteroid	1.850	1.786	1.818	33.8	17.9	8.8	0.4	0.3	0.3	2	90.2	54.5	32.6	1.89	2.02	3.82	C
5364 (1980 RC1)	Main Belt Asteroid	2.037	2.018	2.028	26.2	13.8	6.9	0.0	0.1	0.1	2	1425.0	217.1	57.7	1.89	2.00	3.78	C
5386 Bajaja (1975 TH6)	Main Belt Asteroid	2.258	1.977	1.987	28.7	15.0	7.6	0.5	0.2	0.1	4	60.8	67.2	64.3	1.91	1.98	3.79	-
5397 Vojislava (1988 VB5)	Main Belt Asteroid	2.160	2.091	2.092	41.4	21.9	10.9	0.1	0.1	0.1	3	450.4	267.2	96.4	1.89	2.00	3.78	SI
5433 Kairen (1988 VZ2)	Main Belt Asteroid	2.548	2.089	2.523	50.8	27.0	13.5	1.5	0.6	0.4	4	34.9	43.2	36.8	1.88	2.01	3.78	-
5450 Sokrates (2780 P-L)	Main Belt Asteroid	2.829	2.644	2.829	49.0	26.1	13.1	0.9	0.3	0.3	3	55.7	83.6	49.7	1.88	2.00	3.75	-
5453 Zakharchenya (1975 VS5)	Main Belt Asteroid	1.909	1.909	1.909	16.8	8.9	4.4				1				1.89	2.05	3.86	-
5457 Queen's (1980 TW5)	Main Belt Asteroid	3.006	3.004	3.004	62.7	33.5	17.2	0.1	0.2	0.1	3	447.8	137.4	166.8	1.87	1.95	3.65	-
5464 Weller (1985 VC1)	Main Belt Asteroid	2.199	2.193	2.193	54.3	28.6	14.3	0.5	0.3	0.1	6	105.7	81.9	175.1	1.90	2.00	3.79	-
5471 Tunguska (1988 PK1)	Main Belt Asteroid	3.060	3.060	3.060	110.9	58.9	30.0				1				1.88	1.96	3.69	-
5476 (1989 TO11)	Jupiter Trojan	5.007	4.904	4.904	203.9	108.7	55.4	4.5	1.4	1.3	5	45.5	75.9	43.0	1.88	1.96	3.68	-
5488 Kiyosato (1991 VK5)	Main Belt Asteroid	2.910	2.910	2.910	133.2	70.9	35.8	0.1	0.1	0.0	4	1389.1	1389.1	1389.1	1.88	1.98	3.72	-
5511 Cloanthus (1988 TH1)	Jupiter Trojan	5.091	4.906	5.082	263.2	140.5	72.0	3.8	2.6	0.9	9	68.7	54.6	81.3	1.87	1.95	3.65	-
5518 Mariobotta (1989 YF)	Main Belt Asteroid	2.508	2.205	2.226	33.4	17.5	8.8	0.2	0.2	0.1	11	149.7	107.8	171.6	1.91	2.00	3.81	-
5520 Natori (1990 RB)	Main Belt Asteroid	3.106	3.106	3.106	57.7	30.6	15.3				1				1.89	2.00	3.77	-
5555 Wimberly (1986 VF5)	Main Belt Asteroid	2.722	2.722	2.722	45.5	24.4	11.9				1				1.87	2.05	3.82	-
5574 Seagrave (1984 FS)	Main Belt Asteroid	2.780	2.756	2.770	54.2	28.7	14.7	0.1	0.1	0.3	10	411.8	303.8	58.3	1.89	1.96	3.69	-
5592 Oshima (1990 VB4)	Main Belt Asteroid	3.069	2.988	3.028	83.9	44.5	22.7	0.4	0.3	0.3	2	236.9	140.9	88.7	1.88	1.96	3.69	-
5603 Rausudake (1992 CE)	Main Belt Asteroid	4.220	4.220	4.220	182.8	98.4	49.2				1				1.86	2.00	3.71	-
5619 Shair (1990 HC1)	Main Belt Asteroid	2.261	2.261	2.261	40.4	21.1	10.6				1				1.91	2.00	3.83	-
5629 Kuwana (1993 DA1)	Main Belt Asteroid	2.959	2.914	2.924	84.1	44.4	22.2	0.6	0.5	0.3	10	131.0	89.7	65.5	1.89	2.00	3.78	-
5638 Deikoon (1988 TA3)	Jupiter Trojan	5.438	5.287	5.295	214.4	115.3	59.0	1.4	0.5	0.2	4	157.3	252.6	239.6	1.86	1.95	3.63	-
5646 (1990 TR)	Near Earth Object	1.347	1.216	1.241	4.0	2.1	1.0	0.0	0.0	0.0	6	284.5	278.7	168.2	1.91	2.00	3.82	U
5657 Groombridge (1936 QE1)	Main Belt Asteroid	2.180	2.164	2.180	37.4	19.7	10.1	0.2	0.1	0.2	5	218.2	160.1	56.1	1.89	1.96	3.71	-
5677 Aberdonia (1987 SQ1)	Main Belt Asteroid	2.672	2.672	2.672	41.9	22.2	11.1	0.1	0.1	0.0	2	321.0	257.8	257.8	1.88	2.00	3.76	-
5701 Baltuck (1929 VS)	Main Belt Asteroid	2.227	2.218	2.222	49.1	26.0	13.1	0.4	0.2	0.2	6	125.7	155.6	77.4	1.89	1.99	3.76	-
5711 Eneev (1978 SO4)	Main Belt Asteroid	4.579	4.579	4.579	144.7	77.3	39.6				1				1.87	1.95	3.65	-
5780 Lafontaine (1990 EJ2)	Main Belt Asteroid	2.962	2.962	2.962	58.9	31.1	15.5				1				1.89	2.00	3.79	-
5795 Roshchina (1978 SH1)	Main Belt Asteroid	1.914	1.914	1.914	18.3	9.8	4.9				1				1.88	2.00	3.76	-

5806 Archieroy (1986 AG1)	Main Belt Asteroid	1.942	1.933	1.941	31.6	16.6	8.3	0.1	0.1	0.1	3	340.7	257.0	71.8	1.90	2.01	3.81	-
5818 (1989 RC1)	Main Belt Asteroid	1.798	1.797	1.798	27.0	14.1	7.1	0.0	0.0	0.1	2	785.2	290.2	76.0	1.91	1.98	3.78	-
5922 Shouchi (1992 UV)	Main Belt Asteroid	3.275	3.274	3.274	74.1	39.2	19.6	0.3	0.1	0.0	8	260.1	515.8	515.8	1.89	2.00	3.78	-
5936 Khadzhinov (1979 FQ2)	Main Belt Asteroid	3.113	3.043	3.052	68.7	36.2	18.0	0.3	0.3	0.3	11	232.4	124.2	60.8	1.90	2.01	3.81	-
5944 Utesov (1984 JA2)	Main Belt Asteroid	3.035	3.028	3.028	57.3	30.3	15.1	0.1	0.1	0.1	9	624.8	206.5	206.5	1.89	2.00	3.79	-
5950 Leukippos (1986 PS4)	Main Belt Asteroid	2.712	2.692	2.702	45.3	23.7	12.0	0.3	0.0	0.2	2	153.6	642.5	67.2	1.91	1.97	3.77	-
5951 Alicemonet (1986 TZ1)	Main Belt Asteroid	1.879	1.744	1.811	24.5	12.9	6.5	0.2	0.1	0.1	2	159.1	96.2	59.4	1.90	1.99	3.78	-
5996 Julioangel (1983 NR)	Main Belt Asteroid	2.268	2.254	2.255	44.2	23.3	11.5	0.2	0.1	0.2	3	217.0	193.8	56.0	1.90	2.03	3.86	-
6000 United Nations (1987 UN)	Main Belt Asteroid	2.206	2.140	2.173	84.7	44.7	22.4	0.5	0.3	0.2	2	161.4	130.6	130.6	1.89	2.00	3.79	-
6002 (1988 RO)	Jupiter Trojan	4.738	4.728	4.735	207.3	111.8	56.9	0.6	1.2	0.4	3	335.5	96.6	152.5	1.85	1.96	3.64	-
6010 Lyzenga (1990 OE)	Main Belt Asteroid	2.192	2.191	2.191	25.6	13.5	6.7	0.0	0.1	0.0	2	950.9	151.4	193.8	1.89	2.02	3.83	-
6019 Telford (1991 RO6)	Main Belt Asteroid	3.125	3.125	3.125	98.8	52.7	26.3				1				1.88	2.00	3.75	-
6025 Naotosato (1992 YA3)	Main Belt Asteroid	3.020	2.892	2.956	111.2	59.0	29.5	0.6	0.4	0.2	2	200.3	152.4	152.4	1.89	2.00	3.77	-
6031 Ryokan (1982 BQ4)	Main Belt Asteroid	3.087	3.086	3.087	91.2	48.4	24.6	0.3	0.4	0.2	6	346.4	132.2	101.1	1.89	1.97	3.71	-
6042 Cheshirecat (1990 WW2)	Mars Crossing Asteroid	1.774	1.706	1.738	36.0	18.9	9.4	0.0	0.1	0.1	5	1936.7	219.7	113.9	1.90	2.00	3.81	-
6071 Sakitama (1992 AS1)	Main Belt Asteroid	2.771	2.771	2.771	59.8	31.5	15.7				1				1.90	2.00	3.80	S
6073 (1939 UB)	Main Belt Asteroid	2.517	2.483	2.500	61.5	32.6	16.5	0.3	0.1	0.2	5	211.9	301.0	105.7	1.89	1.98	3.73	-
6094 Hisako (1990 VQ1)	Main Belt Asteroid	2.579	2.579	2.579	46.7	25.0	12.5				1				1.87	2.00	3.74	-
6100 Kunitomoikkansai (1991 VK4)	Main Belt Asteroid	2.027	2.027	2.027	19.9	10.4	5.3				1				1.92	1.95	3.74	-
6104 Takao (1993 HZ)	Main Belt Asteroid	2.609	2.477	2.543	42.0	22.4	11.2	0.1	0.0	0.0	2	324.9	17759.3	17759.3	1.88	2.00	3.76	-
6122 Henrard (1987 SW1)	Main Belt Asteroid	1.987	1.987	1.987	16.8	8.9	4.5				1				1.88	2.00	3.76	-
6137 Johnfletcher (1991 BY)	Main Belt Asteroid	3.122	3.122	3.122	133.4	70.8	35.4				1				1.88	2.00	3.77	-
6152 Empedocles (1989 GB3)	Main Belt Asteroid	2.054	2.054	2.054	39.0	20.5	10.3				1				1.90	2.00	3.80	-
6175 Cori (1983 XW)	Main Belt Asteroid	2.528	2.528	2.528	38.8	20.6	10.3	0.1	0.1	0.0	2	373.9	253.3	253.3	1.89	2.00	3.77	-
6194 Denali (1990 TN)	Main Belt Asteroid	2.412	2.253	2.411	32.6	17.2	8.8	0.5	0.2	0.1	8	64.3	68.9	161.2	1.90	1.95	3.70	-
6210 Hyunseop (1991 AX1)	Main Belt Asteroid	2.816	2.816	2.816	41.1	21.9	11.0				1				1.88	2.00	3.75	-
6363 Doggett (1981 CB1)	Main Belt Asteroid	2.084	2.084	2.084	21.7	11.5	5.8				1				1.88	2.00	3.76	-
6379 Vrba (1987 VA1)	Main Belt Asteroid	3.215	3.126	3.133	98.3	52.0	26.3	0.3	0.2	0.2	4	330.3	318.6	126.9	1.89	1.98	3.74	-
6408 Saijo (1992 UT5)	Main Belt Asteroid	2.857	2.857	2.857	49.3	26.4	12.8				1				1.87	2.05	3.84	-
6424 Ando (1994 EN3)	Main Belt Asteroid	2.904	2.738	2.893	58.4	31.1	15.5	0.6	0.5	0.2	4	95.6	67.9	67.9	1.88	2.00	3.76	-
6463 Isoda (1994 AG3)	Main Belt Asteroid	2.184	2.184	2.184	101.6	53.4	27.0				1				1.90	1.97	3.76	-

6467 Prilepina (1979 TS2)	Main Belt Asteroid	2.594	2.594	2.594	32.0	16.8	8.4	0.2	0.0	0.0	4	163.1	1128.4	1128.4	1.91	2.00	3.82	-
6481 Tenzing (1988 RH2)	Main Belt Asteroid	1.945	1.921	1.933	21.8	11.6	5.8	0.0	0.0	0.0	2	463.5	671.9	671.9	1.89	2.00	3.78	-
6485 Wendeesther (1990 UR1)	Mars Crossing Asteroid	1.638	1.631	1.635	14.3	7.5	3.8	0.0	0.1	0.0	2	15440.5	88.4	82.0	1.89	2.00	3.80	-
6488 Drebach (1991 GU9)	Main Belt Asteroid	2.261	2.261	2.261	33.3	17.6	8.9	0.0	0.2	0.0	2	3049.9	81.1	3049.9	1.90	1.97	3.75	-
6514 Torahiko (1987 WY)	Main Belt Asteroid	1.996	1.996	1.996	37.8	20.0	10.1				1				1.90	1.97	3.74	-
6557 Yokonomura (1990 VR3)	Main Belt Asteroid	2.666	2.666	2.666	50.0	26.6	13.3				1				1.88	2.00	3.76	-
6607 Matsushima (1991 UL2)	Main Belt Asteroid	2.453	2.330	2.432	39.4	20.9	10.6	0.5	0.1	0.2	3	73.2	169.4	57.0	1.88	1.97	3.71	-
6619 Kolya (1973 SS4)	Main Belt Asteroid	3.651	3.406	3.642	101.9	54.2	27.1	1.2	0.7	0.4	4	86.0	76.8	76.8	1.88	2.00	3.76	-
6633 (1986 TR4)	Main Belt Asteroid	2.174	2.174	2.174	28.6	15.0	7.6				1				1.91	1.96	3.75	-
6642 Henze (1990 UE3)	Main Belt Asteroid	2.743	2.743	2.743	49.5	26.0	13.3				1				1.90	1.95	3.71	-
6650 Morimoto (1991 RS1)	Main Belt Asteroid	2.244	2.244	2.244	40.4	21.2	10.8				1				1.90	1.97	3.75	-
6663 Tatebayashi (1993 CC)	Main Belt Asteroid	2.766	2.766	2.766	49.4	26.0	13.4				1				1.90	1.95	3.70	-
6669 Obi (1994 JA1)	Main Belt Asteroid	2.178	2.177	2.178	28.2	14.9	7.4	0.0	0.1	0.0	2	2438.9	179.3	179.3	1.90	2.00	3.80	S
6697 Celentano (1987 HM1)	Main Belt Asteroid	3.221	3.107	3.128	81.5	43.2	22.0	0.5	0.3	0.3	12	168.4	124.0	76.9	1.89	1.96	3.71	-
6703 (1988 CH)	Main Belt Asteroid	2.030	2.012	2.029	26.3	13.8	6.9	0.1	0.1	0.0	3	258.5	222.4	181.9	1.91	1.99	3.80	-
6785 (1990 VA7)	Main Belt Asteroid	3.491	3.430	3.489	135.6	72.2	36.1	0.9	0.6	0.5	5	151.5	118.9	73.0	1.88	2.00	3.76	-
6794 Masuisakura (1992 DK)	Main Belt Asteroid	2.428	2.425	2.426	143.7	75.8	38.2	0.6	0.5	0.3	7	224.9	166.2	136.1	1.90	1.98	3.76	-
6828 Elbsteel (1990 VC1)	Main Belt Asteroid	2.112	2.112	2.112	31.3	16.4	8.4				1				1.91	1.96	3.74	-
6905 Miyazaki (1990 TW)	Main Belt Asteroid	2.251	2.211	2.231	111.4	58.7	29.5	0.2	0.1	0.2	6	526.4	446.1	172.6	1.90	1.99	3.78	-
6924 Fukui (1993 TP)	Main Belt Asteroid	3.198	3.190	3.198	88.6	47.4	24.1	0.1	0.3	0.3	4	1070.7	157.9	70.4	1.87	1.96	3.67	-
6980 Kyusakamoto (1993 SV1)	Main Belt Asteroid	2.797	2.729	2.763	49.4	26.0	13.2	0.2	0.1	0.2	2	220.5	191.9	56.0	1.90	1.97	3.75	-
6991 Chichibu (1995 AX)	Main Belt Asteroid	1.940	1.913	1.915	38.1	20.0	10.1	0.3	0.3	0.1	8	120.5	71.5	95.6	1.90	1.98	3.76	-
6997 Laomedon (3104 T-3)	Jupiter Trojan	5.406	5.281	5.344	213.3	115.7	58.5	1.2	0.3	0.5	2	176.6	455.8	107.5	1.84	1.98	3.64	-
7001 Noether (1955 EH)	Main Belt Asteroid	2.072	2.072	2.072	23.8	12.6	6.3				1				1.89	2.00	3.78	-
7023 Heiankyo (1992 KE)	Main Belt Asteroid	2.480	2.251	2.251	30.4	16.0	8.0	0.2	0.1	0.1	12	143.5	154.1	68.8	1.90	2.00	3.80	-
7055 Fabiopagan (1989 KB)	Main Belt Asteroid	2.088	2.085	2.087	31.4	16.6	8.2	0.1	0.1	0.2	3	313.9	186.7	49.8	1.89	2.04	3.84	-
7106 Kondakov (1978 PM3)	Main Belt Asteroid	2.434	2.414	2.424	43.0	22.8	11.6	0.1	0.1	0.1	4	423.6	177.9	179.6	1.88	1.97	3.70	-
7143 Haramura (1995 WU41)	Main Belt Asteroid	2.692	2.677	2.678	87.3	46.4	23.2	0.2	0.1	0.1	3	408.1	632.2	156.8	1.88	2.00	3.76	-
7174 Semois (1988 SQ)	Main Belt Asteroid	3.465	3.441	3.442	94.7	50.2	25.3	1.6	0.8	0.5	4	59.3	65.2	54.7	1.89	1.99	3.75	-
7177 (1990 TF)	Main Belt Asteroid	2.343	2.343	2.343	27.5	14.6	7.3				1				1.89	2.00	3.77	-
7183 (1991 RE16)	Main Belt Asteroid	3.109	3.104	3.104	62.2	32.8	16.4	0.2	0.3	0.1	7	283.4	125.4	125.4	1.90	2.00	3.80	-

7189 Kuniko (1992 SX12)	Main Belt Asteroid	1.937	1.937	1.937	15.4	8.1	4.0				1				1.90	2.05	3.89	-
7191 (1993 MA1)	Main Belt Asteroid	2.582	2.560	2.561	50.2	26.6	13.4	0.2	0.2	0.1	4	201.2	121.8	151.1	1.89	1.99	3.74	-
7206 Shiki (1996 QT)	Main Belt Asteroid	2.773	2.773	2.773	41.2	21.7	11.1	0.0	0.0	0.0	2	1261.9	1261.9	1261.9	1.90	1.95	3.70	-
7352 (1994 CO)	Jupiter Trojan	5.113	4.977	5.108	379.5	203.9	103.8	12.0	7.0	3.3	4	31.7	29.1	31.3	1.86	1.96	3.66	-
7358 Oze (1995 YA3)	Near Earth Object	1.320	1.238	1.279	6.9	3.6	1.8	0.0	0.0	0.0	2	521.7	692.1	55.3	1.90	1.99	3.80	Sq
7451 Verbitskaya (1978 PU2)	Main Belt Asteroid	2.400	2.374	2.399	53.1	28.0	14.0	0.4	0.3	0.1	4	136.0	108.4	140.8	1.90	2.00	3.80	S
7456 Doressoundiram (1982 OD)	Main Belt Asteroid	1.894	1.848	1.880	26.6	14.0	7.1	0.2	0.1	0.1	10	137.7	182.8	64.7	1.90	1.99	3.77	-
7468 Anfimov (1990 UP11)	Main Belt Asteroid	2.674	2.670	2.670	55.3	29.2	14.9	0.2	0.1	0.1	3	295.1	282.4	296.3	1.89	1.96	3.71	-
7476 Ogiltsbie (1993 GE)	Main Belt Asteroid	3.870	3.870	3.870	98.8	52.5	26.3				1				1.88	2.00	3.76	-
7487 Toshitana (1994 YM)	Main Belt Asteroid	2.244	2.238	2.240	48.8	25.8	12.9	0.2	0.3	0.2	5	240.6	90.9	73.0	1.89	1.99	3.77	-
7496 Miroslovholub (1995 WN6)	Main Belt Asteroid	2.063	2.062	2.062	73.6	38.9	19.3	0.1	0.2	0.2	3	604.1	251.9	98.6	1.89	2.01	3.81	-
7530 Mizusawa (1994 GO1)	Main Belt Asteroid	2.224	2.221	2.222	53.2	28.1	14.1	0.2	0.1	0.2	2	327.4	275.0	90.6	1.90	1.99	3.77	-
7559 Kirstinemeyer (1985 VF)	Main Belt Asteroid	2.180	2.141	2.160	30.9	16.4	8.2	0.0	0.1	0.1	2	3447.3	179.9	57.4	1.89	2.00	3.77	-
7569 (1989 BK)	Main Belt Asteroid	2.207	1.786	1.997	31.5	16.5	8.3	1.0	0.5	0.2	2	32.1	31.8	48.8	1.91	1.98	3.78	-
7593 (1992 WP4)	Main Belt Asteroid	2.410	2.376	2.408	62.3	32.7	16.6	0.1	0.2	0.1	3	724.1	181.5	155.5	1.90	1.98	3.76	-
7616 Sadako (1996 VF2)	Main Belt Asteroid	2.668	2.666	2.667	67.2	35.6	18.0	0.6	0.4	0.2	6	119.4	87.0	86.2	1.89	1.98	3.73	-
7718 Desnoux (1997 EP30)	Main Belt Asteroid	2.703	2.703	2.703	66.3	35.0	17.5				1				1.89	2.00	3.79	-
7730 Sergerasimov (1978 NN1)	Main Belt Asteroid	2.044	2.034	2.035	26.0	13.6	6.8	0.0	0.1	0.0	3	579.3	153.4	153.4	1.92	2.00	3.84	-
7764 (1991 AB)	Main Belt Asteroid	2.142	2.142	2.142	31.1	16.5	8.3				1				1.89	2.00	3.77	-
7784 Watterson (1994 PL)	Main Belt Asteroid	1.914	1.914	1.914	20.1	10.6	5.3				1				1.90	2.00	3.80	-
7815 Dolon (1987 QN)	Jupiter Trojan	5.001	4.997	5.001	290.7	156.7	78.4	0.2	0.6	0.9	3	1467.9	248.7	90.4	1.86	2.00	3.71	-
7857 Lagerros (1978 QC3)	Main Belt Asteroid	2.689	2.605	2.621	87.6	46.3	23.3	0.4	0.2	0.2	15	247.7	222.5	103.6	1.89	1.98	3.75	-
8219 (1996 JL)	Main Belt Asteroid	2.600	2.325	2.330	44.0	23.1	11.5	1.0	0.6	0.4	3	45.5	41.4	29.0	1.91	2.00	3.82	-
8296 Miyama (1993 AD)	Main Belt Asteroid	2.377	2.377	2.377	35.9	18.9	9.5				1				1.89	2.00	3.79	-
8316 Wolkenstein (3002 P-L)	Main Belt Asteroid	2.639	2.639	2.639	89.0	47.1	23.6				1				1.89	2.00	3.78	-
8354 (1989 RF)	Main Belt Asteroid	2.734	2.734	2.734	45.3	24.1	12.0				1				1.88	2.00	3.76	-
8578 Shojikato (1996 WZ)	Main Belt Asteroid	2.721	2.717	2.719	50.0	26.4	13.5	0.2	0.1	0.1	4	278.5	206.2	184.9	1.89	1.95	3.70	-
8762 Hiaticula (3196 T-1)	Main Belt Asteroid	2.344	2.344	2.344	32.7	17.4	8.7				1				1.88	2.00	3.76	-
8795 Dudorov (1981 EO9)	Main Belt Asteroid	2.783	2.783	2.783	45.2	23.7	12.2				1				1.90	1.95	3.71	-
8804 Eliason (1981 JB2)	Main Belt Asteroid	3.237	3.233	3.237	74.3	39.6	20.3	0.3	0.2	0.3	5	261.6	210.3	64.0	1.88	1.95	3.67	-
8838 (1989 UW2)	Main Belt Asteroid	3.149	3.148	3.149	108.4	57.9	29.0	0.3	0.3	0.2	5	374.7	193.5	121.3	1.87	2.00	3.74	-

8842 (1990 KF)	Main Belt Asteroid	2.132	2.131	2.131	23.4	12.5	6.2	0.0	0.1	0.0	2	520.7	197.1	197.1	1.88	2.00	3.76	-
8860 Rohloff (1991 TE5)	Main Belt Asteroid	2.456	2.442	2.456	43.2	22.7	11.4	0.1	0.1	0.1	3	339.8	362.8	114.2	1.90	1.99	3.79	-
8941 Junsaito (1997 BL2)	Main Belt Asteroid	3.129	3.129	3.129	56.4	30.1	15.2	0.0	0.4	0.0	2	2817.8	81.3	2817.8	1.87	1.97	3.70	-
9006 Voytkevych (1982 UA7)	Main Belt Asteroid	2.150	2.149	2.149	49.3	26.0	13.1	0.0	0.0	0.1	2	988.4	1439.9	156.0	1.90	1.99	3.77	-
9023 Mnethus (1988 RG1)	Jupiter Trojan	4.919	4.916	4.916	292.9	157.3	80.0	0.6	0.7	0.3	3	477.0	223.3	279.5	1.86	1.97	3.66	-
9096 Tamotsu (1995 XE1)	Main Belt Asteroid	3.109	3.109	3.109	63.1	33.8	16.9				1				1.87	2.00	3.74	-
9142 Rhesus (5191 T-3)	Jupiter Trojan	4.685	4.566	4.571	209.8	112.0	56.8	1.1	0.6	0.6	4	197.6	195.4	91.2	1.87	1.97	3.69	-
9147 Kourakuen (1977 DD1)	Main Belt Asteroid	1.964	1.964	1.964	18.3	9.6	4.7	0.0	0.1	0.0	2	546.2	124.8	201.1	1.91	2.03	3.87	-
9173 (1989 TZ15)	Main Belt Asteroid	2.655	2.655	2.655	41.9	21.9	11.0				1				1.91	2.00	3.83	-
9193 Geoffreycopland (1992 ED1)	Main Belt Asteroid	2.260	2.251	2.252	33.5	17.8	8.9	0.0	0.1	0.1	3	1327.6	158.9	63.7	1.88	1.99	3.75	-
9209 (1994 UK1)	Main Belt Asteroid	2.073	2.072	2.072	23.6	12.5	6.1	0.1	0.1	0.0	3	246.4	111.4	591.2	1.89	2.04	3.86	-
9297 Marchuk (1984 MP)	Main Belt Asteroid	2.783	2.783	2.783	54.3	28.9	14.8				1				1.88	1.95	3.67	-
9366 (1992 WR1)	Main Belt Asteroid	1.809	1.809	1.809	12.9	6.8	3.4				1				1.89	2.00	3.78	-
9536 Statler (1981 UR27)	Main Belt Asteroid	2.930	2.930	2.930	58.5	31.2	15.6				1				1.88	2.00	3.75	-
9659 (1996 EJ)	Main Belt Asteroid	2.829	2.829	2.829	53.7	28.3	14.2				1				1.89	2.00	3.79	-
9739 Powell (1987 SH7)	Main Belt Asteroid	2.026	2.026	2.026	16.6	8.7	4.5				1				1.90	1.95	3.70	-
10039 Keet Seel (1984 LK)	Main Belt Asteroid	2.392	1.951	2.172	33.5	17.6	8.9	0.8	0.4	0.2	2	42.1	46.8	36.0	1.90	1.99	3.78	-
10096 (1991 RKS)	Main Belt Asteroid	2.750	2.689	2.691	49.6	26.3	13.2	0.1	0.2	0.1	4	470.3	106.9	106.9	1.88	2.00	3.76	-
10142 Sakka (1993 VG1)	Main Belt Asteroid	2.075	2.053	2.063	78.7	41.4	20.8	0.1	0.2	0.1	6	773.6	258.3	234.0	1.90	1.99	3.78	-
10199 Chariklo (1997 CU26)	Centaur	13.85 8	13.85 7	13.857	4177.9	2331.4	1212.3	4.0	2.2	1.2	2	1048.3	1048.3	1048.3	1.79	1.92	3.45	D
10236 (1998 QA93)	Main Belt Asteroid	2.089	2.089	2.089	19.7	10.5	5.3				1				1.87	2.00	3.74	-
10258 (1940 AB)	Main Belt Asteroid	2.894	2.888	2.889	70.7	37.5	19.0	0.3	0.3	0.3	4	226.8	146.8	57.4	1.89	1.98	3.73	-
10359 (1993 TU36)	Main Belt Asteroid	2.028	2.028	2.028	23.8	12.5	6.4	0.0	0.0	0.1	5	753.9	753.9	52.7	1.90	1.95	3.70	-
10400 Hakkaisan (1997 VX)	Main Belt Asteroid	2.064	2.050	2.050	26.1	13.7	6.9	0.0	0.1	0.1	3	1117.8	207.8	98.9	1.90	1.98	3.76	-
10478 Alsabti (1981 WO)	Main Belt Asteroid	2.859	2.859	2.859	48.5	26.0	13.0	0.1	0.0	0.0	3	758.8	758.8	758.8	1.87	2.00	3.74	-
10513 (1989 TJ14)	Main Belt Asteroid	3.040	3.040	3.040	90.5	48.2	24.1				1				1.88	2.00	3.76	-
10551 Goteborg (1992 YL2)	Main Belt Asteroid	2.993	2.984	2.992	63.0	33.4	16.7	0.3	0.2	0.2	9	183.6	165.4	68.8	1.89	2.00	3.77	-
10583 Kanetugu (1995 WC4)	Main Belt Asteroid	2.677	2.630	2.654	73.5	38.8	19.7	0.2	0.2	0.2	6	417.7	187.2	96.9	1.89	1.97	3.74	-
10707 (1981 UV23)	Main Belt Asteroid	1.864	1.863	1.864	27.0	14.3	7.1	0.1	0.0	0.0	2	303.3	924.0	924.0	1.89	2.00	3.78	-
10766 (1990 UB1)	Main Belt Asteroid	2.876	2.671	2.822	70.8	37.6	18.9	0.8	0.4	0.1	8	90.8	106.5	163.1	1.88	1.99	3.75	-
10837 Yuyakekoyake (1994 EJ1)	Main Belt Asteroid	2.516	2.516	2.516	51.0	27.3	13.4				1				1.87	2.05	3.82	-

10840 (1994 LR)	Main Belt Asteroid	3.209	3.209	3.209	74.2	39.1	19.5	0.1	0.0	0.0	3	1293.4	1293.4	1293.4	1.90	2.00	3.80	-
10864 Yamagatashi (1995 QS3)	Main Belt Asteroid	2.892	2.892	2.892	53.6	28.3	14.4				1				1.89	1.96	3.71	-
10885 Horimasato (1996 VE9)	Main Belt Asteroid	3.111	3.111	3.111	57.7	30.4	15.2				1				1.89	2.00	3.79	-
10944 (1999 FJ26)	Main Belt Asteroid	2.365	2.365	2.365	36.2	19.0	9.5				1				1.91	2.00	3.81	-
11003 Andronov (1979 TT2)	Main Belt Asteroid	1.896	1.896	1.896	16.6	8.8	4.5	0.0	0.0	0.0	3	638.2	638.2	638.2	1.90	1.95	3.70	-
11006 Gilson (1980 TZ3)	Main Belt Asteroid	1.885	1.885	1.885	14.1	7.4	3.7				1				1.90	2.00	3.81	-
11021 Fodera (1986 AT2)	Main Belt Asteroid	3.023	3.009	3.023	62.9	33.5	17.1	0.3	0.1	0.2	6	186.2	514.2	106.6	1.88	1.96	3.68	-
11062 (1991 SN)	Main Belt Asteroid	2.792	2.792	2.792	45.1	23.9	11.9				1				1.89	2.00	3.77	-
11183 (1998 GB7)	Main Belt Asteroid	2.371	2.371	2.371	32.9	17.2	8.8				1				1.91	1.96	3.75	-
11221 (1999 JO26)	Main Belt Asteroid	3.034	2.884	2.889	69.8	37.0	18.8	0.3	0.4	0.3	4	259.8	97.6	74.1	1.89	1.97	3.71	-
11250 (1972 AU)	Main Belt Asteroid	2.170	2.160	2.169	40.9	21.5	10.8	0.2	0.1	0.1	3	223.5	171.3	73.4	1.90	2.00	3.80	-
11287 (1990 SX)	Main Belt Asteroid	2.642	2.642	2.642	38.0	20.4	10.2				1				1.86	2.00	3.73	-
11388 (1998 VU4)	Main Belt Asteroid	4.370	4.370	4.370	124.3	65.4	33.5				1				1.90	1.95	3.71	-
11424 (1999 LZ24)	Main Belt Asteroid	2.027	2.024	2.025	60.1	31.7	15.8	0.1	0.1	0.1	6	509.0	257.3	112.1	1.90	2.00	3.79	-
11438 Zeldovich (1973 QR1)	Main Belt Asteroid	1.775	1.771	1.771	16.9	8.9	4.4	2.8	1.6	0.9	4	6.0	5.6	5.0	1.90	2.03	3.86	-
11473 Barbaresco (1982 SC)	Main Belt Asteroid	1.995	1.995	1.995	19.7	10.4	5.2	0.0	0.0	0.0	2	1087.2	1087.2	1087.2	1.89	2.00	3.79	-
11509 Thersilochos (1990 VL6)	Jupiter Trojan	4.503	4.437	4.437	307.4	163.9	83.8	51.6	27.7	14.5	3	6.0	5.9	5.8	1.88	1.96	3.67	-
11515 Oshijiyo (1991 CR1)	Main Belt Asteroid	2.890	2.889	2.890	48.9	26.0	13.0	0.2	0.1	0.0	2	295.5	277.1	277.1	1.88	2.00	3.76	-
11549 (1992 YY)	Main Belt Asteroid	2.719	2.713	2.713	67.0	35.4	18.1	0.4	0.4	0.1	4	165.5	85.0	304.6	1.89	1.96	3.70	-
11552 Boucolion (1993 BD4)	Jupiter Trojan	4.633	4.609	4.632	334.5	178.5	90.4	1.4	1.4	0.2	4	242.4	130.5	475.2	1.87	1.98	3.70	-
11554 Asios (1993 BZ12)	Jupiter Trojan	5.396	5.300	5.396	213.5	113.6	59.4	1.2	0.9	1.1	10	180.5	120.3	54.7	1.88	1.91	3.60	-
11616 (1996 BQ2)	Main Belt Asteroid	3.312	3.224	3.268	73.6	39.0	19.5	0.3	0.7	0.3	2	214.2	59.8	59.8	1.89	2.00	3.77	-
11663 (1997 GO24)	Jupiter Trojan	4.713	4.590	4.652	158.2	84.3	43.7	0.1	1.0	0.0	2	1084.8	87.5	1084.8	1.88	1.93	3.62	-
11780 Thunder Bay (1942 TB)	Main Belt Asteroid	1.944	1.900	1.921	29.1	15.4	7.8	0.1	0.1	0.1	6	319.2	178.8	88.4	1.90	1.98	3.75	-
11787 Baumanka (1977 QF1)	Main Belt Asteroid	2.196	2.196	2.196	49.1	25.8	13.2	1.3	0.6	0.3	2	38.0	40.0	41.0	1.90	1.95	3.71	-
11864 (1989 NH1)	Main Belt Asteroid	1.820	1.820	1.820	12.8	6.7	3.4				1				1.92	1.95	3.75	-
12126 (1999 RM11)	Jupiter Trojan	4.904	4.600	4.629	326.0	174.8	89.5	64.6	34.3	17.2	4	5.0	5.1	5.2	1.86	1.95	3.64	-
12193 (1979 EL)	Main Belt Asteroid	2.265	2.241	2.242	71.4	37.6	18.8	0.6	0.3	0.2	4	113.2	129.5	78.5	1.90	2.00	3.80	-
12265 (1990 FG)	Main Belt Asteroid	1.854	1.854	1.854	14.0	7.3	3.7	0.1	0.0	0.0	3	198.9	549.1	549.1	1.92	2.00	3.83	-
12304 (1991 SR1)	Main Belt Asteroid	2.203	2.203	2.203	25.6	13.7	6.7				1				1.87	2.05	3.84	-
12391 Eoadachi (1994 WE2)	Main Belt Asteroid	2.161	2.160	2.160	33.8	17.9	8.9	0.1	0.0	0.1	12	231.8	359.2	94.1	1.89	2.00	3.79	-

12444 Prothoon (1996 GE19)	Jupiter Trojan	5.226	5.226	5.226	377.3	201.4	102.0				1				1.87	1.98	3.70	-
12552 (1998 QQ45)	Main Belt Asteroid	2.859	2.859	2.859	5026.1	2667.2	1345.8				1				1.88	1.98	3.73	-
12562 Briangrazer (1998 SP36)	Main Belt Asteroid	3.416	3.416	3.416	79.0	42.3	21.6	0.0	0.0	0.0	2	3870.4	3870.4	3870.4	1.87	1.96	3.65	-
12693 (1989 EZ)	Main Belt Asteroid	2.669	2.667	2.668	45.9	24.2	12.4	0.2	0.1	0.1	2	223.6	223.6	223.6	1.90	1.95	3.70	-
12929 (1999 TZ1)	Jupiter Trojan	5.103	5.103	5.103	349.1	187.6	96.0				1				1.86	1.95	3.64	-
12999 Torun (1981 QJ2)	Main Belt Asteroid	1.853	1.853	1.853	15.4	8.1	4.0				1				1.90	2.00	3.80	-
13030 (1989 PF)	Main Belt Asteroid	2.147	2.121	2.131	30.8	16.3	8.1	0.1	0.1	0.1	8	382.4	301.6	156.9	1.89	2.00	3.78	-
13065 (1991 PG11)	Main Belt Asteroid	1.763	1.763	1.763	11.8	6.1	3.1				1				1.92	2.00	3.84	-
13234 Natashaowen (1998 FC74)	Main Belt Asteroid	1.884	1.884	1.884	11.8	6.2	3.2				1				1.92	1.95	3.74	-
13290 (1998 QN75)	Main Belt Asteroid	2.416	2.407	2.409	70.2	37.1	18.6	0.8	0.6	0.3	6	89.7	66.5	66.5	1.89	2.00	3.79	-
13311 (1998 RA68)	Main Belt Asteroid	2.442	2.350	2.356	39.3	20.8	10.4	0.2	0.1	0.1	4	233.8	294.6	147.0	1.89	2.00	3.78	-
13441 Janmerlin (2098 P-L)	Main Belt Asteroid	2.047	1.983	2.024	42.6	22.4	11.2	0.4	0.2	0.2	6	101.0	100.6	51.9	1.90	2.00	3.80	-
13754 (1998 SB63)	Main Belt Asteroid	2.552	2.548	2.550	55.8	29.7	14.8	0.0	0.0	0.0	2	1936.8	3004.3	3004.3	1.88	2.00	3.76	-
13915 Yalow (1982 KH1)	Main Belt Asteroid	2.423	2.423	2.423	33.8	17.9	9.0	0.0	0.0	0.0	2	5626.2	5626.2	5626.2	1.89	2.00	3.77	-
13923 Peterhof (1985 UA5)	Main Belt Asteroid	2.128	2.121	2.121	41.0	21.6	10.8	0.1	0.1	0.1	3	368.5	265.3	101.5	1.90	2.00	3.80	-
14000 (1993 FZ55)	Main Belt Asteroid	1.797	1.797	1.797	12.8	6.8	3.4				1				1.88	2.00	3.75	-
14012 Amedee (1993 XG)	Main Belt Asteroid	2.610	2.509	2.559	50.7	26.9	13.6	0.6	0.3	0.0	2	79.6	98.4	530.7	1.88	1.98	3.72	-
14207 (1999 CS18)	Main Belt Asteroid	2.970	2.970	2.970	57.2	30.8	15.0				1				1.85	2.05	3.80	-
14269 (2000 AH182)	Main Belt Asteroid	2.567	2.394	2.394	32.7	17.2	8.8	0.2	0.0	0.0	3	196.8	812.4	812.4	1.90	1.95	3.71	-
14342 Iglika (1984 SL)	Main Belt Asteroid	1.897	1.890	1.892	47.2	24.9	12.5	0.4	0.3	0.1	6	117.4	93.0	179.5	1.90	2.00	3.79	-
14699 Klarasmi (2000 AV239)	Main Belt Asteroid	2.090	2.090	2.090	26.0	13.8	6.7				1				1.88	2.05	3.86	-
14873 Shoyo (1990 UQ2)	Main Belt Asteroid	1.898	1.898	1.898	16.8	8.9	4.6				1				1.89	1.96	3.70	-
14902 Miyairi (1993 BE2)	Main Belt Asteroid	2.657	2.657	2.657	55.0	28.8	14.4	0.0	0.0	0.0	2	3344.0	3344.0	3344.0	1.91	2.00	3.82	-
15334 (1993 UE)	Main Belt Asteroid	1.919	1.919	1.919	15.2	8.1	4.0	0.0	0.0	0.0	2	1058.9	1058.9	1058.9	1.87	2.05	3.84	-
15502 (1999 NV27)	Jupiter Trojan	5.205	5.204	5.205	343.0	185.3	93.9	1.6	0.0	1.2	2	220.4	5458.5	77.9	1.85	1.97	3.65	-
15790 Keizan (1993 TC)	Mars Crossing Asteroid	1.943	1.943	1.943	20.2	10.6	5.3				1				1.90	2.00	3.80	-
16038 (1999 GD18)	Main Belt Asteroid	2.964	2.845	2.964	52.7	27.8	14.2	0.5	0.2	0.1	6	97.0	114.9	126.0	1.90	1.95	3.71	-
16126 (1999 XQ86)	Main Belt Asteroid	2.085	2.060	2.072	34.6	18.2	9.1	0.1	0.1	0.1	5	245.5	154.5	102.3	1.90	2.01	3.81	-
16182 (2000 AH137)	Main Belt Asteroid	1.800	1.800	1.800	18.6	9.8	4.9				1				1.89	2.00	3.79	-
16210 (2000 CY61)	Main Belt Asteroid	2.262	2.262	2.262	27.7	14.6	7.3				1				1.90	2.00	3.79	-
16403 (1984 WJ1)	Main Belt Asteroid	5.205	5.204	5.205	22.1	11.6	5.8	0.4	0.3	0.1	2	52.4	39.4	39.4	1.91	2.00	3.82	-

16528 Terakado (1991 GV)	Main Belt Asteroid	2.354	2.034	2.194	36.9	19.4	9.9	0.7	0.3	0.1	2	54.8	60.6	91.8	1.91	1.96	3.74	-
16560 Daitor (1991 VZ5)	Jupiter Trojan	5.039	5.039	5.039	182.9	97.4	49.9				1				1.88	1.95	3.67	-
16667 (1993 XM1)	Jupiter Trojan	4.293	4.178	4.184	181.6	96.7	48.7	0.8	1.0	0.3	3	227.3	100.3	181.8	1.88	1.99	3.73	-
16720 (1995 WT)	Main Belt Asteroid	2.487	2.487	2.487	39.2	20.9	10.2				1				1.88	2.05	3.85	-
16886 (1998 BC26)	Main Belt Asteroid	1.985	1.985	1.985	29.3	15.2	7.8				1				1.92	1.95	3.75	-
16956 (1998 MQ11)	Jupiter Trojan	4.656	4.656	4.656	209.7	111.2	56.5				1				1.89	1.97	3.71	-
17171 (1999 NB38)	Jupiter Trojan	4.789	4.789	4.789	225.3	121.5	60.8				1				1.85	2.00	3.71	-
17252 (2000 GJ127)	Main Belt Asteroid	2.463	2.459	2.461	81.7	43.3	21.8	0.4	0.3	0.2	4	200.9	132.6	133.6	1.89	1.98	3.74	-
17297 (3560 P-L)	Main Belt Asteroid	2.865	2.858	2.863	78.8	41.8	21.0	0.5	0.5	0.1	5	146.0	91.2	192.1	1.89	1.99	3.76	-
17365 (1978 VF11)	Jupiter Trojan	4.865	4.850	4.862	246.3	132.6	66.5	0.9	1.0	0.5	3	281.1	130.1	121.2	1.86	1.99	3.70	-
17770 Baume (1998 EU11)	Main Belt Asteroid	2.029	1.913	1.988	24.0	12.6	6.4	0.3	0.1	0.1	3	81.8	131.4	45.0	1.91	1.98	3.78	-
18046 (1999 RN116)	Jupiter Trojan	4.992	4.943	4.945	243.0	131.1	66.6	0.4	0.4	0.5	4	618.1	320.3	125.7	1.85	1.97	3.65	-
18069 (2000 AS199)	Main Belt Asteroid	2.010	2.010	2.010	24.1	12.8	6.3				1				1.89	2.04	3.85	-
18081 (2000 GB126)	Main Belt Asteroid	2.449	2.449	2.449	43.6	23.1	11.6				1				1.89	2.00	3.77	-
18105 (2000 NT3)	Main Belt Asteroid	2.118	2.118	2.118	28.4	14.9	7.6				1				1.91	1.95	3.73	-
18323 (1983 RZ2)	Main Belt Asteroid	2.061	2.061	2.061	19.8	10.3	5.3				1				1.93	1.95	3.76	-
18615 (1998 DJ5)	Main Belt Asteroid	2.240	2.240	2.240	25.1	13.4	6.5	0.0	0.0	0.0	2	1230.5	1230.5	1230.5	1.87	2.05	3.84	-
18616 (1998 DR5)	Main Belt Asteroid	2.294	2.294	2.294	30.3	15.8	8.1				1				1.91	1.96	3.75	-
18654 (1998 FR22)	Main Belt Asteroid	2.132	2.132	2.132	22.2	11.7	5.8				1				1.90	2.00	3.81	-
18835 (1999 NK56)	Main Belt Asteroid	2.425	2.425	2.425	47.0	25.0	12.3				1				1.88	2.03	3.83	-
18896 (2000 GN113)	Main Belt Asteroid	2.241	2.241	2.241	25.8	13.6	6.9				1				1.89	1.96	3.71	-
18901 (2000 MR5)	Main Belt Asteroid	2.737	2.737	2.737	60.3	31.8	16.1	0.3	0.1	0.2	3	187.0	235.1	94.0	1.90	1.97	3.73	-
18958 (2000 QL128)	Main Belt Asteroid	2.895	2.781	2.781	58.8	30.9	15.5	0.4	0.1	0.1	3	157.0	303.1	303.1	1.90	2.00	3.80	-
18977 (2000 QK217)	Main Belt Asteroid	2.288	2.288	2.288	33.2	17.7	8.6				1				1.88	2.05	3.85	-
19020 (2000 SC6)	Jupiter Trojan	4.848	4.724	4.786	226.7	120.9	62.8	1.6	0.9	0.6	2	139.3	139.3	99.6	1.88	1.93	3.61	-
19197 Akasaki (1992 EO)	Main Belt Asteroid	2.279	2.279	2.279	59.8	31.6	15.6				1				1.89	2.03	3.84	-
19336 (1997 AF)	Main Belt Asteroid	1.799	1.799	1.799	12.8	6.7	3.4	0.0	0.0	0.0	2	1847.1	1847.1	1847.1	1.92	1.95	3.75	-
19755 (2000 EH34)	Main Belt Asteroid	2.308	2.308	2.308	30.3	15.8	8.1				1				1.92	1.95	3.74	-
19852 Jamesalbers (2000 TT58)	Main Belt Asteroid	3.241	3.199	3.240	99.0	52.4	26.2	0.6	0.4	0.1	4	152.7	125.6	340.2	1.89	2.00	3.78	-
19919 Pogorelov (1977 TQ6)	Main Belt Asteroid	2.174	2.174	2.174	23.4	12.3	6.3	0.0	0.0	0.0	2	2252.2	2252.2	2252.2	1.90	1.95	3.71	-
19926 (1979 YQ)	Main Belt Asteroid	2.102	2.056	2.082	25.8	13.6	6.9	0.1	0.1	0.1	16	202.1	250.9	60.8	1.89	1.96	3.71	-

20356 (1998 HG147)	Main Belt Asteroid	2.141	2.141	2.141	23.8	12.6	6.4				1				1.89	1.96	3.71	-
20682 (1999 VP23)	Main Belt Asteroid	2.265	2.134	2.199	28.0	14.9	7.4	0.0	0.1	0.1	2	1976.7	128.4	128.4	1.88	2.00	3.76	-
20745 (2000 AS185)	Main Belt Asteroid	2.157	2.151	2.154	33.8	17.9	8.9	0.1	0.1	0.1	4	562.3	181.0	82.8	1.89	2.01	3.81	-
20932 (2258 T-1)	Main Belt Asteroid	2.001	2.001	2.001	21.9	11.6	5.7				1				1.89	2.05	3.86	-
20936 Nemrut Dagı (4835 T-1)	Main Belt Asteroid	1.701	1.701	1.701	15.6	8.2	4.2				1				1.90	1.95	3.71	-
21017 (1988 VP)	Main Belt Asteroid	2.367	2.367	2.367	30.6	16.1	8.2				1				1.89	1.96	3.71	-
21561 Masterman (1998 QR93)	Main Belt Asteroid	2.251	2.243	2.244	30.8	16.3	8.1	0.1	0.1	0.0	3	223.8	177.7	232.1	1.89	2.00	3.78	-
22338 Janemojo (1992 LE)	Main Belt Asteroid	2.084	2.084	2.084	23.5	12.4	6.2				1				1.90	2.00	3.80	-
22476 (1997 EM23)	Main Belt Asteroid	2.133	2.133	2.133	37.0	19.4	9.9	0.0	0.0	0.0	2	3023.4	3023.4	3023.4	1.90	1.96	3.73	-
22978 Nyrola (1999 VO24)	Main Belt Asteroid	2.175	2.175	2.175	23.7	12.4	6.2				1				1.91	2.00	3.83	-
23551 (1994 GO9)	Main Belt Asteroid	1.870	1.870	1.870	12.7	6.6	3.4				1				1.92	1.95	3.74	-
23766 (1998 MZ23)	Main Belt Asteroid	2.135	2.135	2.135	23.3	12.2	6.1				1				1.90	2.00	3.80	-
23880 Tongil (1998 SG5)	Main Belt Asteroid	2.217	2.217	2.217	33.9	17.6	8.8				1				1.92	2.00	3.84	-
24298 (1999 XC221)	Main Belt Asteroid	2.227	2.227	2.227	33.6	17.8	8.9				1				1.89	2.00	3.77	-
24451 (2000 QS104)	Jupiter Trojan	4.632	4.597	4.598	251.9	135.1	68.8	1.2	1.0	0.4	4	206.3	140.4	178.4	1.86	1.97	3.66	-
24844 (1995 VM1)	Main Belt Asteroid	1.903	1.854	1.864	14.1	7.4	3.8	0.0	0.1	0.0	3	308.0	96.9	399.6	1.91	1.96	3.74	-
25316 (1999 AH23)	Main Belt Asteroid	2.360	2.360	2.360	57.0	30.3	15.2				1				1.88	2.00	3.76	-
25317 (1999 BL12)	Main Belt Asteroid	1.996	1.995	1.995	21.8	11.5	5.7	0.1	0.1	0.0	2	194.2	127.6	194.2	1.90	2.03	3.84	-
27136 (1998 XJ16)	Main Belt Asteroid	2.043	1.816	1.929	20.0	10.5	5.3	0.4	0.2	0.1	2	55.4	62.1	62.1	1.90	2.00	3.81	-
27220 (1999 FN25)	Main Belt Asteroid	2.863	2.863	2.863	45.1	24.1	12.1				1				1.87	2.00	3.74	-
27484 (2000 GN94)	Main Belt Asteroid	2.792	2.792	2.792	54.4	28.5	14.3				1				1.91	2.00	3.81	-
27508 (2000 GS142)	Main Belt Asteroid	2.771	2.701	2.702	45.3	23.8	12.1	0.1	0.1	0.1	6	308.6	172.9	126.7	1.90	1.97	3.75	-
29080 Astrocourier (1978 RK)	Main Belt Asteroid	2.634	2.634	2.634	49.9	26.3	13.2	0.2	0.0	0.0	3	216.6	905.4	905.4	1.89	2.00	3.79	-
29189 Udinsk (1990 UY3)	Main Belt Asteroid	2.396	2.395	2.395	36.0	19.1	9.6	0.1	0.2	0.1	12	345.2	105.0	136.1	1.88	1.99	3.75	-
29408 (1996 VJ5)	Main Belt Asteroid	2.284	2.241	2.242	45.4	24.0	12.0	0.6	0.4	0.2	4	75.9	58.4	58.4	1.89	2.00	3.79	-
29555 MACEK (1998 DP)	Main Belt Asteroid	2.794	2.792	2.794	64.7	34.2	17.0	0.1	0.2	0.1	3	804.8	226.1	177.3	1.89	2.01	3.79	-
30472 (2000 OM23)	Main Belt Asteroid	2.729	2.729	2.729	41.5	21.7	11.1				1				1.91	1.95	3.73	-
30594 (2001 QD30)	Main Belt Asteroid	2.752	2.576	2.664	45.8	24.2	12.4	0.7	0.3	0.1	2	70.4	94.6	85.2	1.89	1.95	3.69	-
30724 Peterburgtrista (1978 SX2)	Main Belt Asteroid	3.119	3.068	3.116	74.8	39.9	20.3	0.3	0.2	0.2	4	231.8	182.3	120.7	1.88	1.97	3.69	-
31170 (1997 WO58)	Main Belt Asteroid	1.813	1.813	1.813	10.9	5.8	2.9				1				1.89	2.00	3.79	-
31263 (1998 EG9)	Main Belt Asteroid	2.238	2.238	2.238	21.1	11.3	5.6				1				1.87	2.00	3.74	-

31879 (2000 FL12)	Main Belt Asteroid	2.426	2.302	2.364	36.0	19.0	9.7	0.3	0.1	0.0	2	119.8	139.7	237.7	1.90	1.96	3.72	-
32230 (2000 OP27)	Main Belt Asteroid	2.861	2.793	2.861	48.6	26.0	12.9	0.3	0.2	0.3	9	192.5	145.3	45.8	1.87	2.01	3.77	-
32251 (2000 OH50)	Main Belt Asteroid	2.806	2.806	2.806	40.8	21.5	10.8				1				1.89	2.00	3.79	-
32475 (2000 SD234)	Jupiter Trojan	4.993	4.894	4.894	169.1	91.5	45.7	0.9	0.2	0.1	6	191.9	469.5	469.5	1.85	2.00	3.70	-
32499 (2000 YS11)	Jupiter Trojan	4.437	4.426	4.432	233.9	125.2	63.1	1.0	0.5	0.8	2	231.0	249.6	82.4	1.87	1.98	3.71	-
32897 Curtharris (1994 PD)	Mars Crossing Asteroid	1.803	1.803	1.803	12.8	6.6	3.4				1				1.92	1.95	3.75	-
33717 (1999 LS26)	Main Belt Asteroid	2.591	2.573	2.582	46.1	24.5	12.4	0.0	0.1	0.1	2	2701.1	404.0	117.5	1.88	1.98	3.73	-
34373 (2000 RT44)	Main Belt Asteroid	2.168	2.168	2.168	25.3	13.3	6.7				1				1.90	2.00	3.80	-
34642 (2000 WN2)	Jupiter Trojan	4.923	4.813	4.868	186.1	100.3	50.8	1.1	1.1	1.2	2	167.8	93.7	42.9	1.85	1.97	3.66	-
35558 (1998 FT122)	Main Belt Asteroid	2.150	2.150	2.150	28.2	15.0	7.5				1				1.88	2.00	3.75	-
37187 (2000 WP60)	Main Belt Asteroid	2.257	2.256	2.256	27.7	14.7	7.4	0.0	0.0	0.0	2	2820.5	2820.5	2820.5	1.88	2.00	3.76	-
37275 (2000 XF43)	Main Belt Asteroid	2.257 28.66	2.257 28.66	2.257	33.7	17.6	8.8				1				1.92	2.00	3.84	-
38628 Huya (2000 EB173)	TNO	9	8	28.668	12395.5	7169.9	3888.8	29.6	23.4	9.3	2	418.9	306.5	418.9	1.73	1.84	3.19	-
44892 (1999 VJ8)	Main Belt Asteroid	2.116 30.61	2.115 30.59	2.115	34.5	18.3	9.0	0.1	0.1	0.2	3	295.9	226.5	47.9	1.89	2.04	3.85	-
47171 (1999 TC36)	TNO	4	8	30.598	10812.2	6247.0	3356.6	26.2	22.6	24.7	12	413.2	276.6	136.1	1.73	1.86	3.22	-
48898 (1998 MO5)	Main Belt Asteroid	1.864	1.864	1.864	16.9	8.8	4.5				1				1.91	1.96	3.75	-
49965 (1999 XA231)	Main Belt Asteroid	2.192	2.188	2.190	33.7	17.7	9.1	0.1	0.0	0.0	2	384.4	702.9	296.7	1.90	1.96	3.72	-
51365 (2000 TA42)	Jupiter Trojan	5.201 41.61	5.128 41.61	5.165	198.1	106.9	53.4	0.5	0.9	0.5	2	366.9	117.5	117.5	1.85	2.00	3.71	-
55637 (2002 UX25)	TNO	5	4	41.614	25937.2	15440.9	8501.2	43.6	25.7	14.1	2	594.8	601.2	601.2	1.68	1.82	3.05	-
58143 (1983 VD7)	Main Belt Asteroid	1.835	1.835	1.835	40.2	21.2	10.4				1				1.89	2.04	3.87	-
64968 (2002 AW2)	Main Belt Asteroid	1.899	1.880	1.889	20.2	10.6	5.3	0.0	0.1	0.0	4	413.1	155.4	155.4	1.91	2.00	3.81	-
76857 (2000 WE132)	Jupiter Trojan	4.974	4.974	4.974	168.5	90.9	46.6				1				1.85	1.95	3.62	-
80076 (1999 JO101)	Main Belt Asteroid	2.385 46.34	2.376 46.34	2.376	32.8	17.4	8.6	0.2	0.1	0.1	6	184.8	121.7	133.3	1.89	2.03	3.83	-
84522 (2002 TC302)	TNO	8 47.88	5 47.88	46.347	23822.3	14399.4	7940.6	62.4	26.3	91.4	2	381.6	548.2	86.9	1.65	1.81	3.00	-
90482 Orcus (2004 DW)	Dwarf Planet / TNO	2 44.27	2 44.27	47.882	101430.2	61268.8	34000.3	19.2	56.8	31.8	4	5275.9	1078.9	1069.1	1.66	1.80	2.98	-
120347 Salacia (2004 SB60)	TNO	2 32.19	2 32.18	44.272	17071.2	10322.1	5558.1	10.2	6.1	3.3	2	1679.6	1679.6	1679.6	1.65	1.86	3.07	-
134340 Pluto	Dwarf Planet / TNO	0 96.52	7 96.52	32.189	2175134.3	1271016.7	687444.1	548.6	334.2	169.9	9	3964.7	3803.4 14181.	4045.1	1.71	1.85	3.16	-
136199 Eris (2003 UB313)	Dwarf Planet / TNO	8 52.16	6 52.13	96.526	1268999.2	832435.8	488648.3	167.5	58.7	91.7	8	7578.3	6	5327.0	1.52	1.70	2.60	-
136472 Makemake (2005 FY9)	Dwarf Planet / TNO	6 39.03	7 39.03	52.138	1039701.6	633315.2	352878.4	502.5	262.2	185.9	8	2069.1	2415.2 37817.	1898.3 37817.	1.64	1.79	2.95	-
144897 (2004 UX10)	TNO	4	4	39.034	14223.2	8411.6	4588.1	0.4	0.2	0.1	2	37817.7	7	7	1.69	1.83	3.10	-

145452 (2005 RN43)	TNO	40.66	40.66															
		5	5	40.665	24132.7	14245.0	7876.7				1				1.69	1.81	3.06	-
		49.85	49.37															
303775 (2005 QU182)	TNO	7	9	49.397	29798.1	18130.6	10082.9	104.0	95.4	33.9	7	286.4	190.1	297.0	1.64	1.80	2.96	-
		12.98	12.98															
		7	7	12.987	1577.0	869.0	450.6				1				1.81	1.93	3.50	-
310071 (2010 KR59)	TNO																	

Table 6: Summary of photometric data for the objects listed in this catalogue. The columns are, from left to right: asteroid name; classification; maximum, minimum and median heliocentric distance of observation by Herschel; median flux at 250 microns (mJy); median flux at 350 microns (mJy); median flux at 500 microns (mJy); standard deviation of 250 micron flux; standard deviation of 350 micron flux; standard deviation of 500 micron flux; number of observations; s/n at 250 microns; s/n at 350 microns; s/n at 500 microns; ratio 250/350 micron flux; ratio 250/500 micron flux; ratio of 350/500 micron flux.

Name	NAIF ID	Max r	Min r	Points	Slope 250	R ²	Type
1 Ceres	2000001	2.931	2.583	19	-0.283	0.776	C
2 Pallas	2000002	3.171	2.680	13	-0.417	0.934	B
3 Juno	2000003	3.325	2.002	6	-0.353	0.979	Sk
4 Vesta	2000004	2.558	2.268	18	-0.126	0.244	V
6 Hebe	2000006	2.882	2.061	11	-0.367	0.800	S
7 Iris	2000007	2.914	2.494	5	-0.341	0.842	S
8 Flora	2000008	2.539	2.305	7	-0.401	0.608	S
10 Hygiea	2000010	3.208	2.985	8	-0.537	0.741	C
11 Parthenope	2000011	2.290	2.210	2	-0.260	1.000	Sk
19 Fortuna	2000019	2.658	2.057	12	-0.303	0.915	Ch
21 Lutetia	2000021	2.738	2.371	6	-0.389	0.937	Xk
29 Amphitrite	2000029	2.567	2.369	3	-0.383	0.955	S
37 Fides	2000037	3.101	2.685	6	-0.424	0.965	S
40 Harmonia	2000040	2.372	2.233	4	-0.199	0.643	S
47 Aglaja	2000047	3.148	2.566	5	-0.351	0.904	B
52 Europa	2000052	3.420	2.768	8	-0.338	0.943	C
54 Alexandra	2000054	3.241	3.142	4	-0.183	0.785	C
56 Melete	2000056	2.429	2.015	4	-0.243	0.995	Xk
59 Elpis	2000059	2.475	2.396	4	-0.374	0.650	B
60 Echo	2000060	2.556	2.162	4	-0.318	0.959	S
65 Cybele	2000065	3.722	3.451	7	-0.358	0.816	Xc
72 Feronia	2000072	2.141	1.995	2	-0.256	1.000	TDG
79 Eurynome	2000079	2.292	1.987	4	-0.324	0.994	S
85 Io	2000085	2.411	2.152	3	-0.288	0.999	B
87 Sylvia	2000087	3.623	3.303	7	-0.517	0.989	X
88 Thisbe	2000088	3.113	2.671	5	-0.358	0.863	B
93 Minerva	2000093	2.909	2.366	4	-0.341	0.932	C

142 Polana	2000142	2.723	2.533	4	-0.381	0.837	B
173 Ino	2000173	3.311	2.783	7	-0.404	0.928	Xk
188 Menippe	2000188	2.631	2.327	2	-0.354	1.000	S
220 Stephania	2000220	1.955	1.860	6	0.296	0.949	XC
222 Lucia	2000222	3.376	3.136	6	-0.400	0.514	BU
226 Weringia	2000226	2.462	2.361	13	-0.857	0.924	S
231 Vindobona	2000231	3.153	2.865	2	-0.492	1.000	-
271 Penthesilea	2000271	2.805	2.705	4	-0.348	0.621	PC
274 Philagoria	2000274	3.397	3.274	5	-0.499	0.773	-
313 Chaldaea	2000313	2.754	2.476	4	-0.354	0.969	C
318 Magdalena	2000318	3.287	3.129	4	-0.380	0.849	CXF
359 Georgia (1893 M)	2000359	2.414	2.310	5	-0.169	0.428	X
366 Vincentina (1893 W)	2000366	3.054	2.984	4	-0.252	0.516	Ch
372 Palma (1893 AH)	2000372	2.722	2.407	3	-0.332	0.952	B
377 Campania (1893 AN)	2000377	2.623	2.501	4	-0.412	0.953	Ch
382 Dodona (1894 AT)	2000382	3.511	3.088	5	-0.494	0.919	M
405 Thia (1895 BZ)	2000405	3.212	3.044	2	-0.576	1.000	Ch
438 Zeuxo (1898 DU)	2000438	2.664	2.531	13	-0.265	0.221	F:
454 Mathesis (1900 FC)	2000454	2.892	2.739	4	-0.215	0.994	CB
465 Alekto (1901 FW)	2000465	3.557	3.244	4	-0.386	0.969	-
492 Gismonda (1902 JR)	2000492	2.706	2.586	5	-0.247	0.631	-
511 Davida (1903 LU)	2000511	3.496	3.159	3	-0.314	0.982	C
520 Franziska (1903 MV)	2000520	2.942	2.752	4	-0.431	0.973	CGU
525 Adelaide (1908 EKa)	2000525	2.415	2.210	4	-0.327	0.996	SU
532 Herculina (1904 NY)	2000532	3.253	2.315	2	-0.326	1.000	S
537 Pauly (1904 OG)	2000537	2.848	2.455	16	-0.313	0.809	DU:
597 Bandusia (1906 UB)	2000597	3.053	2.292	14	-0.331	0.960	S
607 Jenny (1906 VC)	2000607	3.065	2.991	2	-0.666	1.000	-

614 Pia (1906 VQ)	2000614	2.633	2.438	4	-0.347	0.881	C
625 Xenia (1907 XN)	2000625	2.195	2.064	2	-0.355	1.000	Sa
638 Moira (1907 ZQ)	2000638	3.039	2.757	4	-0.322	0.978	Ch
656 Beagle (1908 BU)	2000656	3.571	3.488	4	-0.537	0.939	-
658 Asteria (1908 BW)	2000658	2.809	2.702	4	-0.427	0.865	S
668 Dora (1908 DO)	2000668	2.334	2.262	6	0.746	0.932	Ch
704 Interamnia (1910 KU)	2000704	3.380	2.601	6	-0.428	0.956	B
717 Wisibada (1911 MJ)	2000717	2.662	2.337	2	-0.240	1.000	DX:
731 Sorga (1912 OQ)	2000731	2.725	2.585	12	-0.232	0.296	Xe
770 Bali (1913 TE)	2000770	2.252	1.960	2	-0.266	1.000	S
786 Bredichina (1914 UO)	2000786	3.651	3.525	6	-0.181	0.948	C
787 Moskva (1914 UQ)	2000787	2.397	2.218	4	-0.215	0.992	-
826 Henrika (1916 ZO)	2000826	2.924	2.850	6	0.200	0.158	C
827 Wolfiana (1916 ZW)	2000827	2.034	1.927	2	-0.182	1.000	-
834 Burnhamia (1916 AD)	2000834	3.386	2.994	2	-0.502	1.000	GS:
852 Wladilena (1916 S27)	2000852	2.203	2.078	6	-0.012	0.011	Ch
853 Nansenia (1916 S28)	2000853	2.525	2.346	2	-0.473	1.000	Ch
868 Lova (1917 BU)	2000868	2.579	2.335	4	-0.397	0.994	Ch
889 Erynia (1918 DG)	2000889	2.185	2.061	12	0.134	0.267	-
923 Herluga (1919 GB)	2000923	2.377	2.105	4	-0.331	0.990	-
932 Hooveria (1920 GV)	2000932	2.372	2.217	10	-0.370	0.410	CB
960 Birgit (1921 KH)	2000960	2.041	1.879	4	-0.055	0.421	-
963 Iduberga (1921 KR)	2000963	2.165	2.088	7	0.456	0.755	S
973 Aralia (1922 LR)	2000973	3.176	2.977	4	-0.340	0.834	Xk
987 Wallia (1922 MR)	2000987	2.580	2.519	6	0.772	0.904	-
1007 Pawlowia (1923 OX)	2001007	2.494	2.410	4	-0.396	0.562	K
1019 Strackea (1924 QN)	2001012	2.696	1.816	3	-0.023	1	S
1047 Geisha (1924 TE)	2001047	1.835	1.811	6	2.030	0.986	S

1085 Amaryllis (1927 QH)	2001085	3.231	3.143	4	-0.376	0.710	-
1142 Aetolia (1930 BC)	2001142	3.431	3.331	2	-0.939	1.000	-
1173 Anchises (1930 UB)	2001173	4.689	4.596	4	-0.292	0.770	P
1178 Irmela (1931 EC)	2001178	3.168	3.049	3	-0.407	1.000	-
1183 Jutta (1930 DC)	2001183	2.645	2.423	4	-0.182	0.832	-
1200 Imperatrix (1931 RH)	2001200	3.159	2.763	4	-0.080	0.229	-
1259 Ogyalla (1933 BT)	2001259	3.445	3.271	5	-0.490	0.840	-
1267 Geertruida (1930 HD)	2001267	2.318	2.048	2	-0.325	1	-
1286 Banachiewicz (1933 QH)	2001286	2.956	2.809	4	-0.377	0.637	S
1294 Antwerpia (1933 UB1)	2001294	3.003	2.074	3	-0.343	0.996	CX
1299 Mertona (1934 BA)	2001299	2.765	2.399	4	-0.361	0.995	-
1302 Werra (1924 SV)	2001302	3.234	2.899	4	-0.433	0.998	-
1310 Villigera (1932 DB)	2001310	2.462	2.388	3	-0.120	0.911	S
1324 Knysna (1934 LL)	2001324	2.319	1.957	4	-0.278	0.976	Sq
1338 Duponta (1934 XA)	2001338	2.303	2.067	4	-0.334	0.9542	-
1339 Desagneaux (1934 XB)	2001339	3.067	2.957	4	-0.315	0.448	S
1368 Numidia (1935 HD)	2001368	2.519	2.410	2	-0.170	1	-
1369 Ostanina (1935 QB)	2001369	2.884	2.535	4	-0.354	0.960	-
1397 Umtata (1936 PG)	2001397	2.682	2.577	6	0.190	0.590	-
1408 Trusanda (1936 WF)	2001408	2.924	2.833	4	-0.467	0.794	-
1430 Somalia (1937 NK)	2001430	2.323	2.245	6	0.713	0.827	-
1449 Virtanen (1938 DO)	2001449	2.473	2.205	14	-0.314	0.664	S
1450 Raimonda (1938 DP)	2001450	2.738	2.382	4	-0.338	0.913	-
1466 Mundleria (1938 KA)	2001466	2.700	2.447	8	-0.390	0.794	-
1484 Postrema (1938 HC)	2001484	3.299	3.190	2	-0.603	1	B
1497 Tampere (1938 SB1)	2001497	2.795	2.685	2	-0.57	1	-
1499 Pori (1938 UF)	2001499	2.443	2.187	3	-0.249	0.970	-
1512 Oulu (1939 FE)	2001512	4.268	4.041	5	-0.442	0.662	P

1527 Malmquista (1939 UG)	2001527	2.034	1.788	4	-0.128	0.992	-
1553 Bauersfelda (1940 AD)	2001553	3.159	3.018	4	-0.421	0.996	S
1560 Strattonia (1942 XB)	2001560	2.357	2.113	3	-0.342	0.997	C
1587 Kahrstedt (1933 FS1)	2001587	2.724	2.407	4	-0.385	0.990	Sa
1599 Giomus (1950 WA)	2001599	3.150	2.677	5	-0.422	0.999	-
1607 Mavis (1950 RA)	2001607	1.893	1.815	5	0.346	0.957	-
1628 Strobel (1923 OG)	2001628	3.121	2.996	4	-0.316	0.666	-
1632 Siebohme (1941 DF)	2001632	2.395	2.298	2	-0.231	1	-
1648 Shajna (1935 RF)	2001648	2.430	1.974	9	-0.295	0.890	S
1667 Pels (1930 SY)	2001667	2.249	2.179	6	0.800	0.919	Sa
1669 Dagmar (1934 RS)	2001669	3.494	2.819	13	-0.351	0.986	G:
1678 Hveen (1940 YH)	2001678	3.344	3.147	4	-0.338	0.803	-
1694 Kaiser (1934 SB)	2001694	1.879	1.801	16	0.044	0.068	GC
1764 Cogshall (1953 VM1)	2001764	3.376	3.183	4	-0.303	0.700	-
1790 Volkov (1967 ER)	2001790	2.445	2.302	3	-0.529	0.930	-
1798 Watts (1949 GC)	2001798	2.175	1.960	2	-0.289	1	S
1802 Zhang Heng (1964 TW1)	2001802	2.843	2.773	7	-0.473	0.140	-
1806 Derice (1971 LC)	2001806	2.407	2.191	4	-0.367	0.999	-
1812 Gilgamesh (4645 P-L)	2001812	3.084	2.925	4	-0.575	0.981	-
1826 Miller (1955 RC1)	2001826	3.034	2.873	4	-0.431	0.971	-
1833 Shmakova (1969 PN)	2001833	2.534	2.357	4	-0.298	0.794	-
1858 Lobachevskij (1972 QL)	2001858	2.671	2.530	4	-0.140	0.884	L
1866 Sisypheus (1972 XA)	2001866	1.159	1.052	2	0.387	1	S
1880 McCrosky (1940 AN)	2001880	2.613	2.493	4	-0.302	0.843	-
1911 Schubart (1973 UD)	2001911	4.228	3.959	4	-0.443	0.920	P
1945 Wesselink (1930 OL)	2001945	2.252	2.098	4	-0.167	0.645	-
1988 Delores (1952 SV)	2001988	2.027	1.934	8	0.044	0.024	-
2020 Ukko (1936 FR)	2002020	3.155	3.033	9	-0.458	0.480	-

2111 Tselina (1969 LG)	2002111	2.830	2.739	8	-0.246	0.095	S
2123 Vltava (1973 SL2)	2002123	3.066	2.658	3	-0.516	1.000	-
2132 Zhukov (1975 TW3)	2002132	2.711	2.578	13	-0.350	0.305	-
2165 Young (1956 RJ)	2002165	2.776	2.590	6	-0.365	0.602	-
2181 Fogelin (1942 YA)	2002181	2.859	2.678	5	-0.358	0.873	-
2199 Klet (1978 LA)	2002199	2.174	1.824	2	-0.246	1	-
2201 Oljato (1947 XC)	2002201	1.287	0.989	6	0.225	0.976	Sq
2249 Yamamoto (1942 GA)	2002249	3.299	3.139	4	-0.478	0.965	-
2268 Szmytowna (1942 VW)	2002268	2.857	2.662	4	-0.451	0.958	S
2291 Kevo (1941 FS)	2002291	3.187	3.070	4	-1.030	0.990	-
2297 Daghestan (1978 RE)	2002297	3.526	3.363	5	-0.458	0.434	-
2307 Garuda (1957 HJ)	2002307	3.184	3.092	4	-0.300	0.714	-
2332 Kalm (1940 GH)	2002332	3.062	2.955	12	-0.191	0.056	-
2341 Aoluta (1976 YU1)	2002341	2.048	1.971	7	0.302	0.583	-
2347 Vinata (1936 TK)	2002347	2.768	2.448	4	-0.573	0.994	-
2384 Schulhof (1943 EC1)	2002384	2.920	2.802	11	-0.480	0.304	-
2426 Simonov (1976 KV)	2002426	3.141	2.942	4	-0.484	0.887	-
2438 Oleshko (1975 VO2)	2002438	2.485	2.408	4	0.031	0.113	S
2454 Olaus Magnus (1941 SS)	2002454	2.064	1.798	4	-0.085	0.881	-
2471 Ultrajectum (6545 P-L)	2002471	2.968	2.818	5	-0.317	0.807	-
2490 Bussolini (1976 AG)	2002490	2.591	2.334	4	-0.361	0.979	-
2502 Nummela (1943 EO)	2002502	3.262	3.190	7	-1.602	0.907	-
2511 Patterson (1980 LM)	2002511	2.370	2.147	5	-0.272	0.886	V
2512 Tavastia (1940 GG)	2002512	2.284	2.029	17	-0.380	0.725	-
2576 Yesenin (1974 QL)	2002576	3.393	2.698	9	-0.382	0.994	-
2718 Handley (1951 OM)	2002718	3.017	2.749	5	-0.335	0.601	-
2763 Jeans (1982 OG)	2002763	2.060	1.890	4	-0.060	0.779	V
2768 Gorky (1972 RX3)	2002768	2.062	1.852	2	-0.176	1	-

2820 Iisalmi (1942 RU)	2002820	1.980	1.896	4	-0.595	0.794	-
2825 Crosby (1938 SD1)	2002825	2.169	1.879	2	-0.260	1	-
2861 Lambrecht (1981 VL2)	2002861	2.398	2.301	2	-0.690	1	Xc
2963 Chen Jiageng (1964 VM1)	2002963	2.785	2.677	4	-0.419	0.782	-
2988 Korhonen (1943 EM)	2002988	2.872	2.667	3	-0.298	0.929	S
2995 Taratuta (1978 QK)	2002995	2.880	2.669	7	-0.434	0.820	-
3016 Meuse (1981 EK)	2003016	2.840	2.770	4	-0.673	0.985	-
3044 Saltykov (1983 RE3)	2003044	2.656	2.425	2	-0.360	1	-
3067 Akhmatova (1982 TE2)	2003067	2.351	2.076	2	-0.316	1	-
3088 Jinxiuzhonghua (1981 UX9)	2003088	3.156	3.079	4	-0.591	0.690	-
3110 Wagman (1975 SC)	2003110	2.414	2.261	2	-0.464	1	-
3132 Landgraf (1940 WL)	2003132	2.883	2.769	4	-0.437	0.958	-
3204 Lindgren (1978 RH)	2003204	2.709	2.309	4	-0.437	0.959	-
3240 Laocoon (1978 VG6)	2003240	4.825	4.685	4	-0.507	0.706	-
3308 Ferreri (1981 EP)	2003308	3.122	2.767	5	-0.332	0.804	-
3351 Smith (1980 RN1)	2003351	2.365	2.248	2	-0.316	1	-
3385 Bronnina (1979 SK11)	2003385	2.277	2.189	4	-0.252	0.361	S
3430 Bradfield (1980 TF4)	2003430	2.609	2.499	4	-0.057	0.069	Sq
3451 Mentor (1984 HA1)	2003451	4.957	4.849	14	-1.146	0.838	X
3478 Fanale (1979 XG)	2003478	2.038	1.959	8	0.046	0.044	-
3491 Fridolin (1984 SM4)	2003491	2.705	2.552	4	-0.435	0.867	Sq
3492 Petra-Pepi (1985 DQ)	2003492	2.943	2.727	14	-0.444	0.535	-
3494 Purple Mountain (1980 XW)	2003494	2.293	2.065	4	-0.238	0.885	-
3582 Cyrano (1986 TT5)	2003582	2.913	2.793	5	-0.229	0.597	-
3591 Vladimirkij (1978 QJ2)	2003591	3.207	2.989	3	-0.284	0.997	-
3628 Boznemcova (1979 WD)	2003628	2.033	1.924	7	-0.115	0.432	O
3650 Kunming (1978 UO2)	2003650	2.686	2.606	6	0.428	0.799	-
3903 Kliment Ohridski (1987 SV2)	2003903	2.936	2.783	4	-0.284	0.856	Sq

3986 Rozhkovskij (1985 SF2)	2003986	2.331	2.067	2	-0.328	1.000	-
4100 Sumiko (1988 BF)	2004100	2.824	2.695	4	-0.326	0.854	-
4170 Semmelweis (1980 PT)	2004170	3.013	2.855	4	-0.399	0.796	-
4176 Sudek (1987 DS)	2004176	3.240	3.023	4	-0.580	0.993	-
4287 Trisov (1989 RU2)	2004287	2.081	1.798	4	-0.197	0.957	S
4348 Poulydamas (1988 RU)	2004348	4.819	4.744	9	-0.941	0.901	-
4502 Elizabethann (1989 KG)	2004502	2.873	2.743	5	-0.332	0.715	-
4608 Wodehouse (1988 BW3)	2004608	2.180	1.847	4	-0.327	0.981	-
4694 Festou (1985 PM)	2004694	2.425	2.210	2	-0.175	1	-
4746 Doi (1989 TP1)	2004746	2.830	2.677	2	-0.512	1	-
4848 Tutenchamun (3233 T-2)	2004848	3.213	2.993	2	-0.397	1	-
4963 Kanroku (1977 DR1)	2004963	2.656	2.317	4	-0.307	0.987	-
4973 Showa (1990 FT)	2004973	3.600	3.492	2	-0.556	1	-
5035 Swift (1991 UX)	2005035	2.623	2.465	12	-0.477	0.828	-
5140 Kida (1990 XH)	2005140	2.928	2.813	4	-0.611	0.948	-
5144 Achates (1991 XX)	2005144	4.730	4.324	2	-0.551	1	-
5167 Joe harms (1985 GU1)	2005167	2.567	2.181	3	-0.270	0.994	-
5193 Tanakawataru (1992 ET)	2005193	3.318	3.080	4	-0.465	0.991	-
5275 Zdislava (1986 UU)	2005275	1.816	1.688	2	0.077	1	Sa
5279 Arthuradel (1988 LA)	2005279	1.983	1.858	8	-0.483	0.931	-
5386 Bajaja (1975 TH6)	2005386	2.258	1.977	4	-0.284	0.922	-
5397 Vojislava (1988 VB5)	2005397	2.160	2.091	3	0.138	0.898	Sl
5433 Kairen (1988 VZ2)	2005433	2.548	2.089	4	-0.333	0.996	-
5450 Sokrates (2780 P-L)	2005450	2.829	2.644	3	-0.551	0.999	-
5476 (1989 TO11)	2005476	5.007	4.904	4	-0.767	0.630	-
5511 Cloanthus (1988 TH1)	2005511	5.091	4.906	9	-0.795	0.878	-
5518 Mariobotta (1989 YF)	2005518	2.508	2.205	11	-0.169	0.799	-
5592 Oshima (1990 VB4)	2005592	3.069	2.988	2	-0.316	1	-

5638 Deikoon (1988 TA3)	2005638	5.438	5.287	4	-0.502	0.855	-
5646 (1990 TR)	2005646	1.347	1.216	6	0.085	0.706	U
5936 Khadzhinov (1979 FQ2)	2005936	3.113	3.043	11	-0.033	0.002	-
5951 Alicemonet (1986 TZ1)	2005951	1.879	1.744	2	-0.168	1	-
6025 Naotosato (1992 YA3)	2006025	3.020	2.892	2	-0.230	1	-
6104 Takao (1993 HZ)	2006104	2.609	2.477	2	-0.119	1	-
6194 Denali (1990 TN)	2006194	2.412	2.253	8	-0.670	0.973	-
6379 Vrba (1987 VA1)	2006379	3.215	3.126	4	-0.112	0.185	-
6424 Ando (1994 EN3)	2006424	2.904	2.738	4	-0.420	0.998	-
6607 Matsushima (1991 UL2)	2006607	2.453	2.330	3	-0.568	0.877	-
6619 Kolya (1973 SS4)	2006619	3.651	3.406	4	-0.381	0.953	-
6697 Celentano (1987 HM1)	2006697	3.221	3.107	12	-0.404	0.365	-
6997 Laomedon (3104 T-3)	2006997	5.406	5.281	2	-0.487	1	-
7023 Heiankyo (1992 KE)	2007023	2.480	2.251	12	-0.261	0.954	-
7352 (1994 CO)	2007352	5.113	4.977	4	-2.672	0.994	-
7358 Oze (1995 YA3)	2007358	1.320	1.238	2	0.060	1	Sq
7569 (1989 BK)	2007569	2.207	1.786	2	-0.295	1	-
7857 Lagerros (1978 QC3)	2007857	2.689	2.605	15	0.171	0.198	-
8219 (1996 JL)	2008219	2.600	2.325	3	-0.415	0.943	-
9142 Rhesus (5191 T-3)	2009142	4.685	4.566	4	-0.380	0.664	-
10039 Keet Seel (1984 LK)	2010039	2.392	1.951	2	-0.233	1	-
10766 (1990 UB1)	2010766	2.876	2.671	8	-0.484	0.834	-
11221 (1999 JO26)	2011221	3.034	2.884	4	-0.142	0.623	-
11554 Asios (1993 BZ12)	2011554	5.396	5.300	10	-0.676	0.429	-
11616 (1996 BQ2)	2011616	3.312	3.224	2	-0.346	1	-
11663 (1997 GO24)	2011663	4.713	4.590	2	0.007	1	-
12126 (1999 RM11)	2012126	4.904	4.600	3	-0.495	0.834	-
13311 (1998 RA68)	2013311	2.442	2.350	4	-0.262	0.941	-

14012 Amedee (1993 XG)	2014012	2.610	2.509	2	-0.634	1	-
14269 (2000 AH182)	2014269	2.567	2.394	3	-0.154	0.982	-
16038 (1999 GD18)	2016038	2.964	2.845	6	-0.641	0.901	-
16528 Terakado (1991 GV)	2016528	2.354	2.034	2	-0.249	1	-
16667 (1993 XM1)	2016667	4.293	4.178	3	-0.300	0.727	-
17770 Baume (1998 EU11)	2017770	2.029	1.913	3	-0.481	0.916	-
18958 (2000 QL128)	2018958	2.895	2.781	3	-0.323	0.923	-
19020 (2000 SC6)	2019020	4.848	4.724	2	-0.554	1	-
20682 (1999 VP23)	2020682	2.265	2.134	2	-0.017	1	-
27136 (1998 XJ16)	2027136	2.043	1.816	2	-0.308	1	-
27508 (2000 GS142)	2027508	2.771	2.701	6	0.087	0.063	-
30594 (2001 QD30)	2030594	2.752	2.576	2	-0.432	1.000	-
31879 (2000 FL12)	2031879	2.426	2.302	2	-0.320	1.000	-
32475 (2000 SD234)	2032475	4.993	4.894	6	-0.193	0.076	-
34642 (2000 WN2)	2034642	4.923	4.813	2	-0.527	1.000	-
51365 (2000 TA42)	2051365	5.201	5.128	2	0.384	1.000	-
303775 (2005 QU182)	2303775	49.857	49.379	7	-0.417	0.173	-

Table 7: Summary of the photometric parameters for the flux curve for objects in this catalogue that were observed over a range of at least 0.07AU in heliocentric distance,. The columns represent, from left to right: Name; NAIF ID; Maximum and minimum heliocentric distance of observation by Herschel; Number of Observations; Slope (b) of the 250-micron Flux v heliocentric distance power law ($F=a \cdot r^b$) – left blank if the range of heliocentric distance is <0.07AU; Correlation coefficient r^2 – left blank if the range of heliocentric distance is <0.07AU; Taxonomic type, where known.

Name	NAIF ID	N	Slope	R ²	Type	H	R (km)	Albedo	Rotation (h)	First observation	r (first)	Last observation	r (last)	Direction
220 Stephania	2000220	6	0.296	0.949	XC	11.2	15.9	0.069	18.2	2011-12-19 01:25:54.0	4.590	2012-01-27 10:33:06.0	4.713	Outbound
668 Dora (1908 DO)	2000668	6	0.746	0.932	Ch	12.0	11.7	0.043	22.9	2011-12-19 01:25:54.0	2.408	2012-01-27 10:33:06.0	2.485	Outbound
826 Henrika (1916 ZO)	2000826	6	0.200	0.158	C	11.6	11.3	0.166	6.0	2011-12-19 01:25:54.0	1.879	2012-01-27 10:33:06.0	1.801	Outbound
889 Erynia (1918 DG)	2000889	12	0.134	0.267	-	11.0	8.3	0.230	9.9	2012-06-02 21:43:02.0	1.934	2012-08-05 23:09:55.0	2.027	Inbound

963 Iduberga (1921 KR)	2000963	7	0.456	0.755	S	12.5	4.5	0.220	3.0	2012-06-02 21:43:02.0	2.038	2012-07-23 12:02:04.0	1.959	Inbound
987 Wallia (1922 MR)	2000987	6	0.772	0.904	-	9.5	26.3	0.144	10.1	2011-12-19 01:25:54.0	1.238	2012-01-27 10:33:06.0	1.320	Outbound
1047 Geisha (1924 TE)	2001047	6	2.030	0.986	S	11.9	5.4	0.277	25.6	2011-12-19 01:25:54.0	1.347	2012-01-27 10:33:06.0	1.216	Outbound
1397 Umtata (1936 PG)	2001397	6	0.190	0.590	-	11.5	10.4	0.084	30.0	2011-12-19 01:25:54.0	2.701	2012-01-27 10:33:06.0	2.771	Outbound
1430 Somalia (1937 NK)	2001430	6	0.713	0.827	-	12.1	4.7	0.153	6.9	2011-12-19 01:25:54.0	2.185	2012-01-27 10:33:06.0	2.061	Outbound
1607 Mavis (1950 RA)	2001607	5	0.346	0.957	-	11.3	6.4	0.193	6.1	2011-12-19 01:25:54.0	2.092	2012-01-27 10:33:06.0	2.160	Outbound
1667 Pels (1930 SY)	2001667	6	0.800	0.919	Sa	11.9	4.5	0.455	3.3	2011-12-19 01:25:54.0	2.689	2012-01-27 10:33:06.0	2.605	Outbound
1694 Kaiser (1934 SB)	2001694	16	0.044	0.068	GC	11.5	7.8	0.166	13.0	2012-06-02 21:43:02.0	2.577	2012-07-23 12:02:04.0	2.682	Inbound
1866 Sisypheus (1972 XA)	2001866	2	0.387	1	S	12.4	4.2	0.140	2.4	2011-12-19 10:03:12.0	2.850	2012-01-03 03:56:31.0	2.924	Outbound
1988 Delores (1952 SV)	2001988	8	0.044	0.024	-	13.5	2.9	0.193	88.2	2012-07-12 22:21:22.0	1.287	2012-12-17 19:03:03.0	0.989	Outbound
2201 Oljato (1947 XC)	2002201	6	0.225	0.976	Sq	15.25	0.9	0.433	26	2012-01-02 04:28:05.0	1.816	2012-01-27 10:33:06.0	1.977	Inbound
2341 Aoluta (1976 YU1)	2002341	7	0.302	0.583	-	12.8	3.252	0.426	3	2012-06-02 21:43:02.0	1.860	2012-07-23 12:02:04.0	1.955	Inbound
2438 Oleshko (1975 VO2)	2002438	4	0.031	0.113	S	12.9	3.6	0.468	3.2	2012-07-22 23:51:55.0	2.048	2012-12-17 19:03:03.0	1.971	Outbound
3478 Fanale (1979 XG)	2003478	8	0.046	0.044	-	3.5	3.2	0.362	12.7	2012-06-02 21:43:02.0	1.815	2012-07-22 23:51:55.0	1.893	Inbound
3650 Kunming (1978 UO2)	2003650	6	0.428	0.799	-	13.3	-	0.033	11.7	2011-12-19 01:25:54.0	5.128	2012-01-27 10:33:06.0	5.201	Outbound
5275 Zdislava (1986 UU)	2005275	2	0.077	1	Sa	13.8	-	-	5.2	2012-06-21 20:42:22.0	1.052	2012-12-17 19:03:03.0	1.159	Outbound
5397 Vojislava (1988 VB5)	2005397	3	0.138	0.898	Sl	12.7	5.7	0.101	54.0	2012-06-02 21:43:02.0	2.606	2012-12-17 19:03:03.0	2.686	Outbound
5646 (1990 TR)	2005646	6	0.085	0.706	U	15.4	2.2	0.454	3.2	2012-06-21 20:42:22.0	2.165	2012-08-05 23:09:55.0	2.088	Inbound
7358 Oze (1995 YA3)	2007358	2	0.060	1	Sq	14.6	2.2	0.454	5.4	2011-12-19 01:25:54.0	2.245	2012-01-02 19:19:13.0	2.323	Outbound
7857 Lagerros (1978 QC3)	2007857	15	0.171	0.198	-	11.8	5.6	0.187	3.1	2012-06-02 21:43:02.0	2.262	2012-07-23 06:56:35.0	2.334	Inbound
11663 (1997 GO24)	2011663	2	0.007	1	-	10.9	15.7	0.086	-	2012-06-21 20:42:22.0	2.519	2012-12-17 19:03:03.0	2.580	Outbound
27508 (2000 GS142)	2027508	6	0.087	0.063	-	12.6	5.1	0.207	8.2	2012-07-13 04:05:36.0	2.179	2012-12-17 19:03:03.0	2.249	Outbound
51365 (2000 TA42)	2051365	2	0.384	1	-	10.6	20.3	0.074	58.8	2012-06-21 20:42:22.0	1.811	2012-12-17 19:03:03.0	1.835	Outbound

Table 8: Physical parameters for the twenty-seven objects for which a positive slope of 250 micron flux against heliocentric distance is observed. From left to right the columns are: number, name and provisional designation; NAIF ID; number of measures; slope (b) of the 250-micron Flux v heliocentric distance power law ($F=a \cdot r^b$); Correlation coefficient r^2 of power law fit (shown as “1” if there were just two observations); Taxonomic type, where known; absolute magnitude; measured radius in kilometres; albedo; rotation period in hours (if known); UT date of first Herschel observation; heliocentric distance in AU of first Herschel observation; UT date of last Herschel observation; heliocentric distance in AU of last Herschel observation; segment of orbit (“inbound” if approaching perihelion, “outbound” if receding from perihelion).

Name	NAIF ID	Max r	Min r	q	Q	Points	Slope 250	R^2	Type	H	R (km)	Albedo	Rotation (h)	1st Observation	r(1st)	Last Observation	r(last)	Direction
1866 Sisypheus (1972 XA)	2001866	1.159	1.052	0.874	2.914	2	0.387	1	S	12.4	4.2	0.140	2.4	2011-12-19 10:03:12.0	1.052	2012-01-03 03:56:31.0	1.159	post-perihelion
2341 Aoluta (1976 YU1)	2002341	2.048	1.971	1.876	2.547	7	0.302	0.583	-	12.8	3.252	0.426	3	2012-06-02 21:43:02.0	2.048	2012-07-23 12:02:04.0	1.971	pre-perihelion
963 Iduberga (1921 KR)	2000963	2.165	2.088	1.938	2.556	7	0.456	0.755	S	12.5	4.5	0.220	3.0	2012-06-02 21:43:02.0	2.165	2012-07-23 12:02:04.0	2.088	pre-perihelion
7857 Lagerros (1978 QC3)	2007857	2.689	2.605	2.365	3.326	15	0.171	0.198	-	11.8	5.6	0.187	3.1	2012-06-02 21:43:02.0	2.689	2012-07-23 06:56:35.0	2.605	pre-perihelion
5646 (1990 TR)	2005646	1.347	1.216	1.207	3.078	6	0.085	0.706	U	15.4	2.2	0.454	3.2	2012-06-21 20:42:22.0	1.347	2012-08-05 23:09:55.0	1.216	pre-perihelion
2438 Oleshko (1975 VO2)	2002438	2.485	2.408	1.999	2.489	4	0.031	0.113	S	12.9	3.6	0.468	3.2	2012-07-22 23:51:55.0	2.408	2012-12-17 19:03:03.0	2.485	post-perihelion
1667 Pels (1930 SY)	2001667	2.249	2.179	1.851	2.530	6	0.800	0.919	Sa	11.9	4.5	0.455	3.3	2011-12-19 01:25:54.0	2.179	2012-01-27 10:33:06.0	2.249	pre-aphelion
5275 Zdislava (1986 UU)	2005275	1.816	1.688	1.641	2.758	2	0.077	1	Sa	13.8			5.2	2012-06-21 20:42:22.0	1.688	2012-12-17 19:03:03.0	1.816	post-perihelion
7358 Oze (1995 YA3)	2007358	1.320	1.238	1.092	3.303	2	0.060	1	Sq	14.6	2.2	0.454	5.4	2011-12-19 01:25:54.0	1.238	2012-01-02 19:19:13.0	1.320	pre-aphelion
826 Henrika (1916 ZO)	2000826	2.924	2.850	2.166	3.262	6	0.200	0.158	C	11.6	11.3	0.166	6.0	2011-12-19 01:25:54.0	2.850	2012-01-27 10:33:06.0	2.924	pre-aphelion
1607 Mavis (1950 RA)	2001607	1.893	1.815	1.771	3.328	5	0.346	0.957	-	11.3	6.4	0.193	6.1	2011-12-19 01:25:54.0	1.815	2012-01-27 10:33:06.0	1.893	post-perihelion
1430 Somalia (1937 NK)	2001430	2.323	2.245	2.059	3.064	6	0.713	0.827	-	12.1	4.7	0.153	6.9	2011-12-19 01:25:54.0	2.245	2012-01-27 10:33:06.0	2.323	post-perihelion
27508 (2000 GS142)	2027508	2.771	2.701	2.699	3.300	6	0.087	0.063	-	12.6	5.1	0.207	8.2	2012-07-13 04:05:36.0	2.701	2012-12-17 19:03:03.0	2.771	post-perihelion
889 Erynia (1918 DG)	2000889	2.185	2.061	1.949	2.945	12	0.134	0.267	-	11.0	8.3	0.230	9.9	2012-06-02 21:43:02.0	2.185	2012-08-05 23:09:55.0	2.061	pre-perihelion
987 Wallia (1922 MR)	2000987	2.580	2.519	2.422	3.872	6	0.772	0.904	-	9.5	26.3	0.144	10.1	2011-12-19 01:25:54.0	2.519	2012-01-27 10:33:06.0	2.580	post-perihelion
3650 Kunming (1978 UO2)	2003650	2.686	2.606	2.395	3.867	6	0.428	0.799	-	13.3		0.033	11.7	2011-12-19 01:25:54.0	2.606	2012-01-27 10:33:06.0	2.686	post-perihelion
3478 Fanale (1979 XG)	2003478	2.038	1.959	1.872	2.600	8	0.046	0.044	-	3.5	3.2	0.362	12.7	2012-06-02 21:43:02.0	2.038	2012-07-22 23:51:55.0	1.959	pre-perihelion
1694 Kaiser (1934 SB)	2001694	1.879	1.801	1.777	3.013	16	0.044	0.068	GC	11.5	7.8	0.166	13.0	2012-06-02 21:43:02.0	1.879	2012-07-23 12:02:04.0	1.801	pre-perihelion
220 Stephanina	2000220	1.955	1.860	1.743	2.954	6	0.296	0.949	XC	11.2	15.9	0.069	18.2	2011-12-19 01:25:54.0	1.860	2012-01-27 10:33:06.0	1.955	post-perihelion
668 Dora (1908 DO)	2000668	2.334	2.262	2.149	3.449	6	0.746	0.932	Ch	12.0	11.7	0.043	22.9	2011-12-19 01:25:54.0	2.262	2012-01-27 10:33:06.0	2.334	post-perihelion
1047 Geisha (1924 TE)	2001047	1.835	1.811	1.809	2.674	6	2.030	0.986	S	11.9	5.4	0.277	25.6	2011-12-19 01:25:54.0	1.811	2012-01-27 10:33:06.0	1.835	post-perihelion
2201 Oljato (1947 XC)	2002201	1.287	0.989	0.624	3.720	6	0.225	0.976	Sq	15.25	0.9	0.433	26	2012-01-02 04:28:05.0	1.287	2012-01-27 10:33:06.0	0.989	pre-perihelion
1397 Umtata (1936 PG)	2001397	2.682	2.577	2.013	3.357	6	0.190	0.590	-	11.5	10.4	0.084	30.0	2011-12-19 01:25:54.0	2.577	2012-01-27 10:33:06.0	2.682	post-perihelion
5397 Vojislava (1988 VB5)	2005397	2.160	2.091	2.061	3.001	3	0.138	0.898	SI	12.7	5.7	0.101	54.0	2012-06-02 21:43:02.0	2.092	2012-12-17 19:03:03.0	2.160	post-perihelion
51365 (2000 TA42)	2051365	5.201	5.128	4.944	5.525	2	0.384	1.000	-	10.6	20.3	0.074	58.8	2012-06-21 20:42:22.0	5.128	2012-12-17 19:03:03.0	5.201	post-perihelion
1988 Delores (1952 SV)	2001988	2.027	1.934	1.934	2.373	8	0.044	0.024	-	13.5	2.9	0.193	88.2	2012-07-12 22:21:22.0	1.934	2012-12-17 19:03:03.0	2.027	post-perihelion
11663 (1997 GO24)	2011663	4.713	4.590	4.489	5.800	2	0.007	1	-	10.9	15.7	0.086	-	2012-06-21 20:42:22.0	4.590	2012-12-17 19:03:03.0	4.713	post-perihelion

Table 9: Additional details of the twenty-seven asteroids that show larger flux at greater heliocentric distance. The columns are, from left to right: number, name and provisional designation; NAIF ID; maximum heliocentric distance at which the asteroid was observed by Herschel in AU; minimum heliocentric distance at which the asteroid was observed by Herschel in AU; perihelion

distance ; aphelion distance; number of observations; power law slope of 250 micron flux normalized to a geocentric distance of 1AU against heliocentric distance; correlation coefficient (R^2) of the power law slope of 250 micron flux normalized to a geocentric distance of 1AU against heliocentric distance; taxonomic type; absolute magnitude; radius in kilometres; albedo; rotation period in hours; UT date and time of first observation with Herschel; heliocentric distance of first Herschel observation; UT date and time of last Herschel observation; heliocentric distance of last Herschel observation; orbit quadrant (pre-perihelion, post-perihelion, pre-aphelion, post-aphelion).

11. Analysis

The aim of this catalogue is to make it possible for scientists to exploit this important Herschel data set in new and imaginative ways. Thus it would defeat our purpose for us to define the possible lines of use of the data. Here we limit ourselves to showing just a few, simple correlations that illustrate the possibilities of the data.

11.1. Distribution by taxonomic type

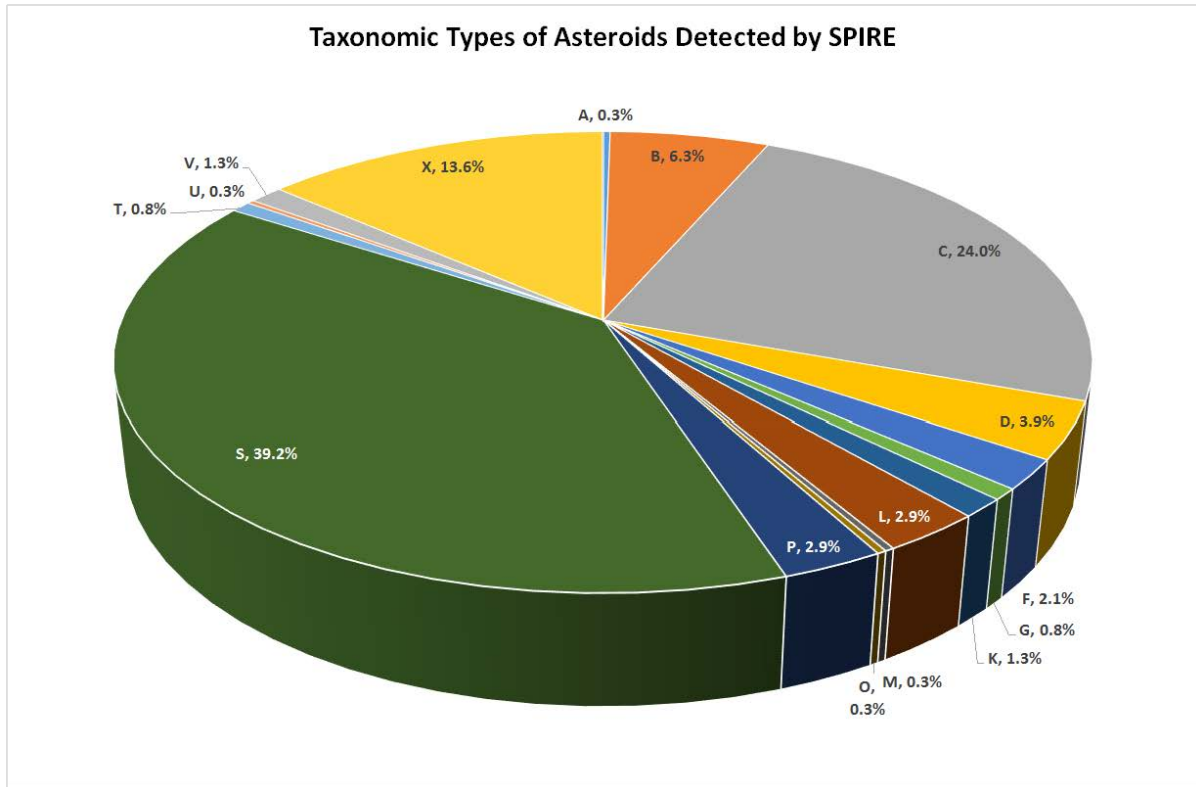
Taxonomic types are known for slightly less than one third of the observed asteroids, as shown in Table 8. The breakdown of taxonomic typing of the 1174 asteroids is shown in Table 9 and in Figure 16. When the objects of unknown type are excluded, the distribution is dominated by S-type (silicate composition, 39%) and the carbonaceous asteroids (C and B-types sum 30%)

Known	32.6%
Unknown	67.4%

Table 10: Fraction of the 1174 Solar System Objects in the catalogue with a known versus unknown taxonomic classification. In all, slightly over two-thirds of the objects included are of unknown type.

Type	Number	Percentage
A	1	0.3%
B	24	6.3%
C	92	24.0%
D	15	3.9%
F	8	2.1%
G	3	0.8%
K	5	1.3%
L	11	2.9%
M	1	0.3%
O	1	0.3%
P	11	2.9%
S	150	39.2%
T	3	0.8%
U	1	0.3%
V	5	1.3%
X	52	13.6%
Unknown	791	

Table 11: The breakdown of asteroids with known SMASS taxonomic type observed in this catalogue. Two thirds of all the objects of known type are either carbonaceous (B & C), or silicate (S).



Ta

Figure 18: The breakdown of SMASS types for the asteroids observed by SPIRE reported in this catalogue. The distribution is dominated by types S, C & B.

11.2. Distribution by 500/250-micron flux ratio

For most objects in the solar system it is a good approximation that the emission in the SPIRE bands is in the Rayleigh-Jeans part of the spectrum, distant from the black body peak and is essentially a power law. However, this is not true for Trans-Neptunian Objects and other outer solar system bodies, particularly those of high albedo (see Table 12). As a first approximation, any black body with an effective temperature of 65K or greater should emit in the Rayleigh-Jeans region for the entire SPIRE wavelength range and thus should show a constant 250 to 500-micron flux. As we see in Figure 19, the ratio of the 250 and 500 micron fluxes is approximately constant for $r < 2$ AU, tending to a value of 3.85.

Effective Temperature (K)	Black body Peak (microns)
300	10
200	14
100	29
86 (Miranda, Uranus V)	34
70	41
49 (Pluto perihelion)	59
39 (Pluto aphelion)	74
34.5 (Mean Triton)	84

Table 12: Wavelength of the peak blackbody emission for a range of temperatures and for some small, outer solar system bodies.

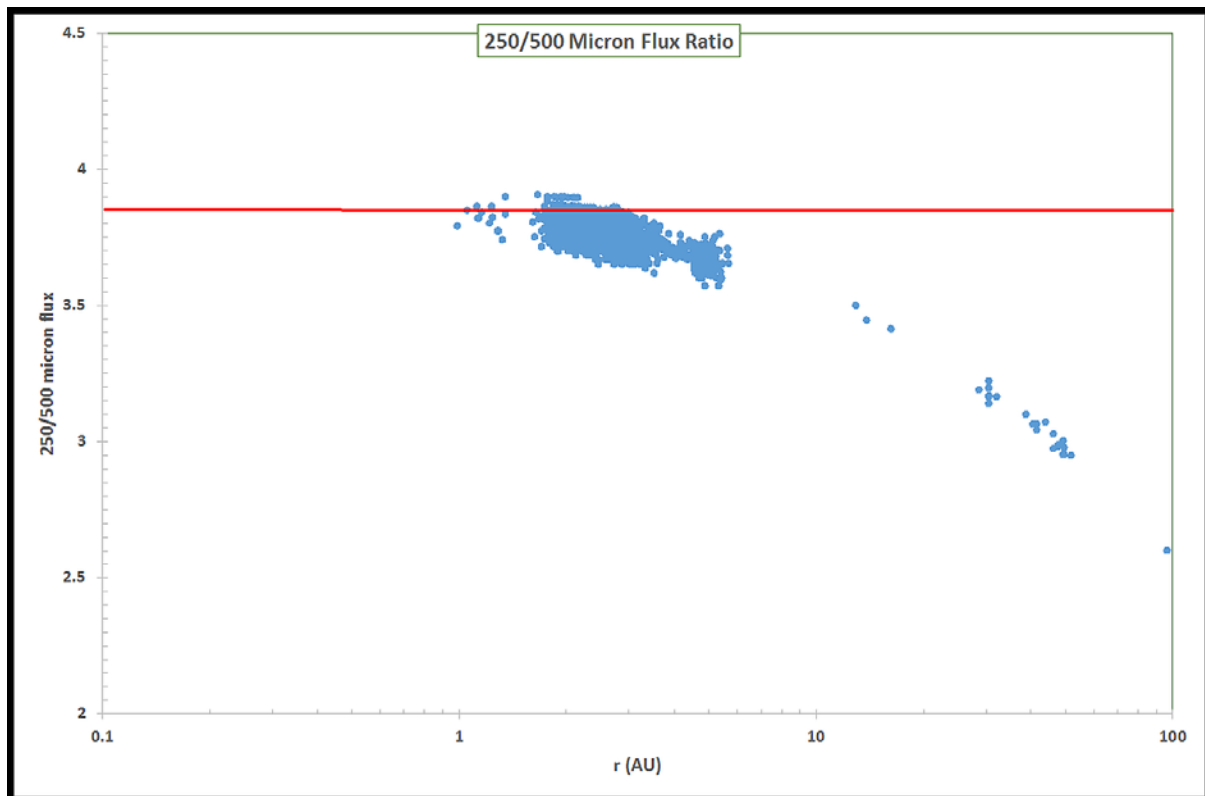


Figure 19: The 250 micron flux divided by the 500 micron flux for the full data sample, plotted against heliocentric distance. The ratio tends to a value of 3.85 at heliocentric distances smaller than 2AU.

The relationship between the ratio of 250 to 500-micron flux and heliocentric distance for different classes of object is shown in Figure 20.

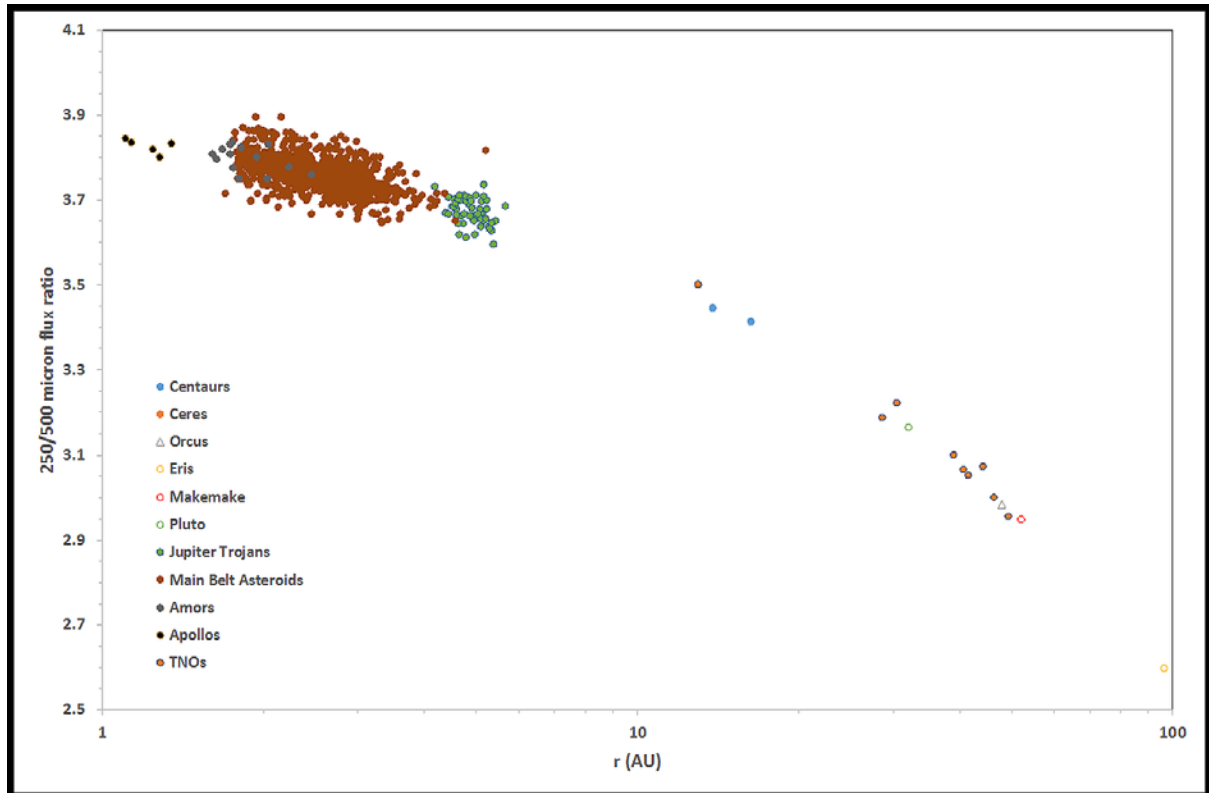


Figure 20: The 250 to 500-micron flux ratio against heliocentric distance for different classes of object.

Given that the longer wavelength SPIRE bands are further from the black body peak, we expect the 350 to 500-micron flux ratio to show a smaller variation with heliocentric distance, which is what is observed, as shown in Figure 21.

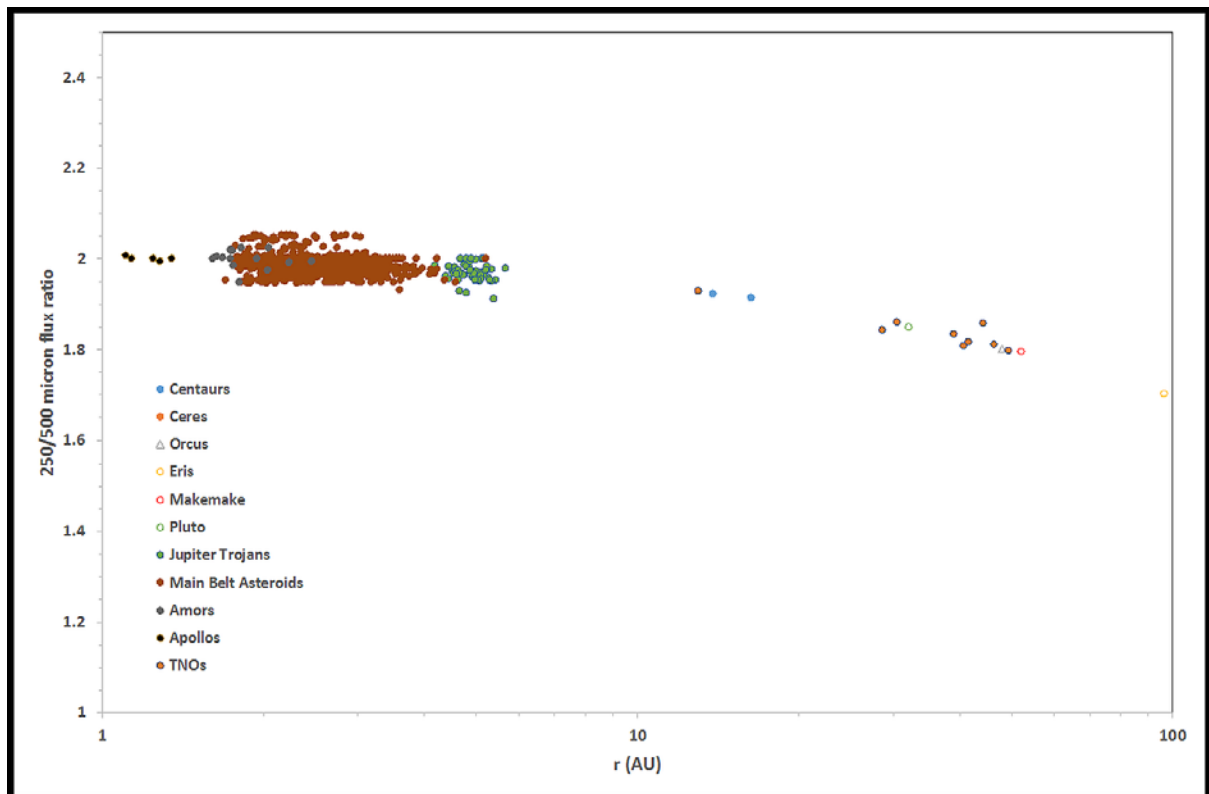


Figure 21: The equivalent plot to Figure 17 for the 350 to 500-micron flux ratio variation with heliocentric distance. As expected, the ratio is almost constant even out as far as the Trans-Neptunian Belt.

When we plot the 500-micron flux against the 250-micron flux, but normalized to a geocentric distance of 1AU, we see evidence, as expected from Figure 17, of the strongest emitters (largest objects) splitting into a 500-micron bright and a 500-micron faint group (Figure 20) according to their heliocentric distance. The faint group includes 1 Ceres, 2 Pallas, 4 Vesta and, more unexpectedly, the TNO, 55657 (2002 UX25). The bright group includes 90482 Orcus, 136199 Eris, 136472 Makemake and 303774 (2005 QU182), which are all TNOs.

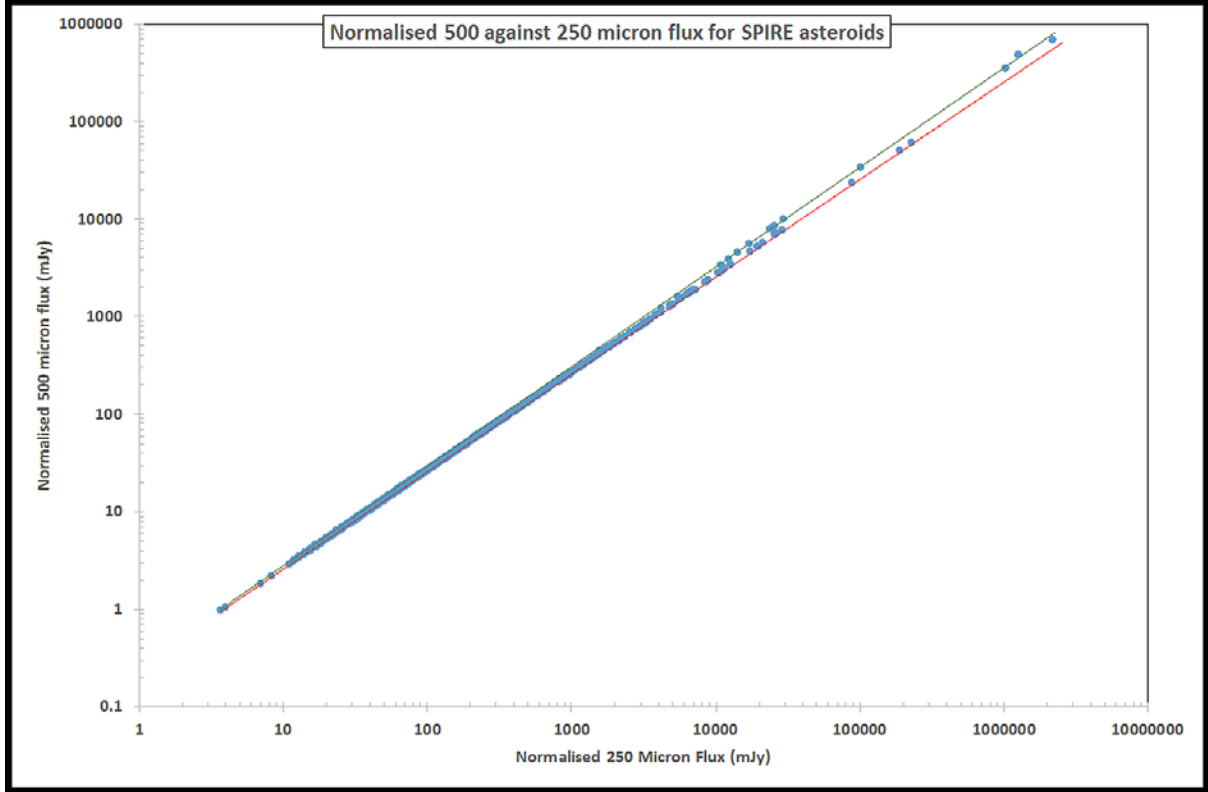


Figure 22: Normalised 500-micron flux against normalised 250-micron flux. There is a suggestion of a split into a group with higher 500-micron fluxes and a group with lower 500-micron fluxes, as shown by the two bounding lines.

11.3. Distribution by Power Law Slope

When we fit the slope (b) of the 250-micron Flux against heliocentric distance by a power law

$$F_{250} = a \cdot r^b \quad (1)$$

We find a median slope of

$$b = -0.34 \quad (2)$$

As the thermal emission is in the Rayleigh-Jeans part of the spectrum, far from the black body peak, we expect all Main Belt asteroids to show similar properties. However, it was immediately obvious

that there was a substantial fraction of outliers, including a significant number of well-observed objects with good-quality data that showed a positive slope and not a negative one. An example, previously shown in Figure 15, Figure 16 and Figure 17 is shown for 220 Stephania. Unexpectedly, in all three bands, the flux is significantly higher at greater heliocentric distance giving a positive slope to the power law fit of flux against heliocentric distance. The behaviour is similar in all three bands, with calculated power law indices of +0.26, +0.32 and +0.31 respectively. Other examples are 668 Dora (1908 DO), 1430 Somalia (1937 NK) and 2201 Oljato (1947 XC). We include 1047 Geisha, despite a smaller range of heliocentric distances, due to its strongly positive slope.

While a large fraction of all objects have Power law slopes within a narrow range of values – half of all the objects have slope in the range $-0.43 < b < -0.24$ – there is a long tail to the distribution towards flatter, or even positive slopes (Figure 23), indicating that a wide range of thermal properties exist in these asteroids. While part of the broadening of the histogram can be attributed to scatter due to a combination of having fluxes at a small number of epochs for some objects and photometric errors, it is far too broad to be attributable to only these causes.

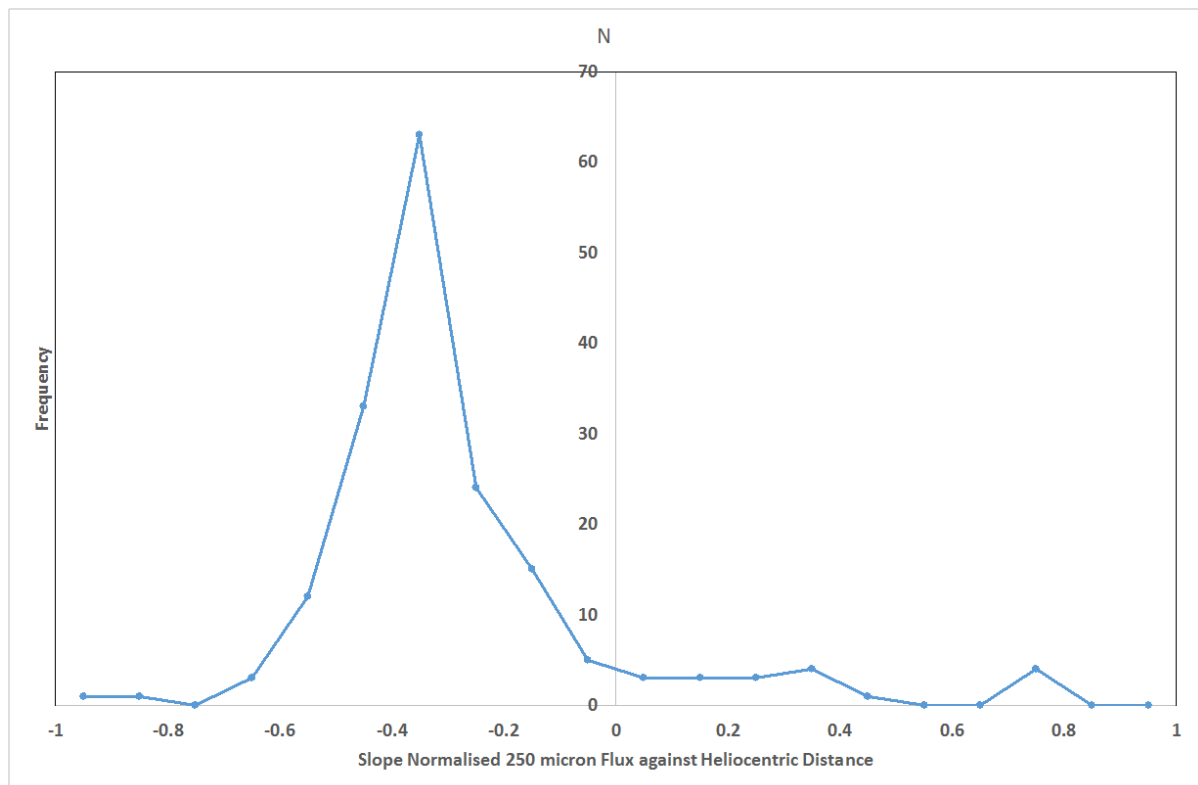


Figure 23: Histogram of the distribution of Power Law slopes of 250 micron flux against heliocentric distance for the 178 objects with fluxes measured at a minimum of two epochs and with a heliocentric distance range of at least 0.07AU.

There is no obvious correlation of Power Law slope with physical parameters such as size or albedo. The diameters of the anomalous objects range from 1.8-52km, the albedos from 0.033 to 0.468 and the rotation periods from 2.4-88 hours. There is a weak tendency to steeper slope at higher heliocentric distance, as shown in Figure 24. All four asteroids observed inside the orbit of Mars show positive Power Law slope, while the Jupiter Trojans show, on average, slightly steeper Power Law slopes than the Main Belt Asteroids. Although the sample size is small, it is noticeable that S-Type asteroids dominate the objects that show positive Power Law slope (10 of 15 objects with a

SMASS classification are S-type and only 2 are C-type). Similarly, we find that, of the objects that show positive slope, twenty of twenty-eight were receding from perihelion at the time.

The presence of positive Power Law slopes indicates anomalous thermal behaviour. This could be due to a high thermal inertia of the surface layers, due to the presence of an insulating dust layer, or porosity of the surface layers. One way that thermal inertia could be manifested is in an asymmetry in the number of objects with anomalous thermal behaviour that are approaching and receding from perihelion. We find that objects receding from perihelion that show anomalous behaviour outnumber those approaching perihelion by 2:1.

This is similar to tossing a coin and obtaining double the number of “Heads” than “Tails”. The probability that 20 of 28 tosses come out “Heads” for an unbiased coin is 1%, suggestive that thermal inertia is the source of this behaviour.

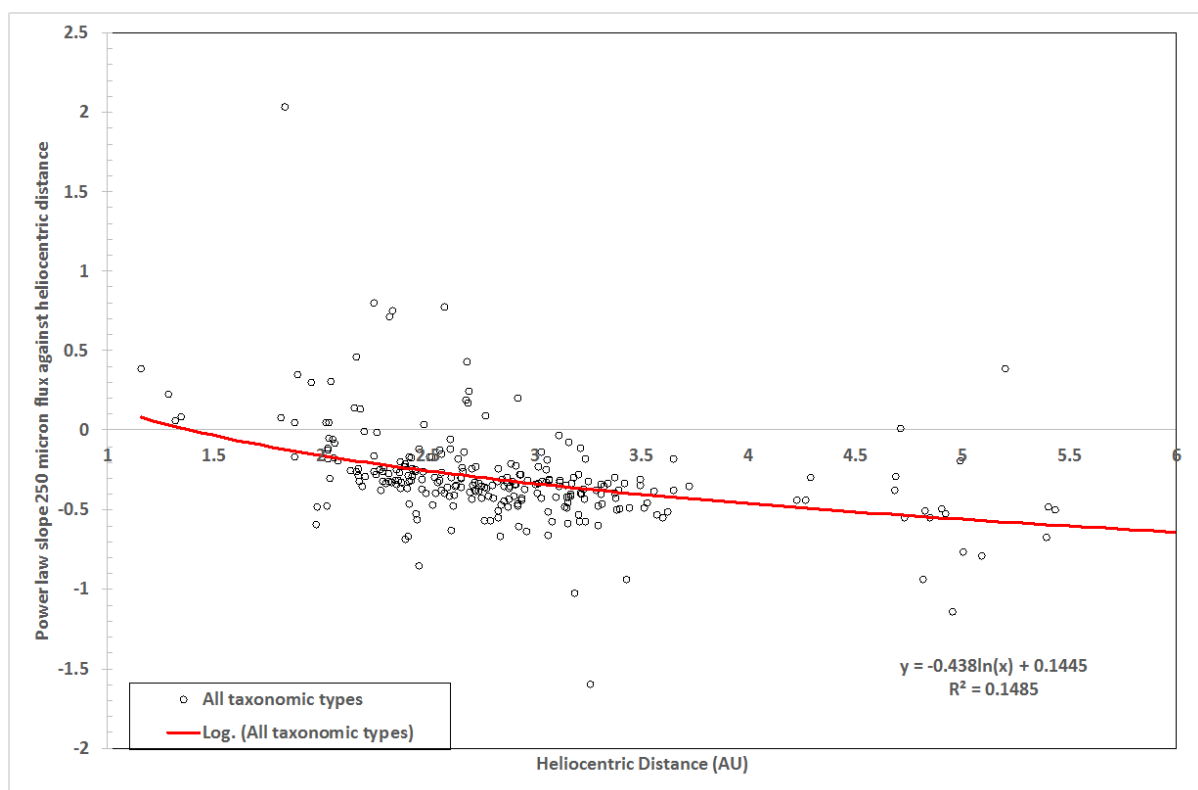


Figure 24: Power Law slope of the 250 micron flux against heliocentric distance for the asteroids described above. A weak trend is observed to more negative slope at larger heliocentric distances. In contrast, all four objects observed inside the orbit of Mars show positive slope.

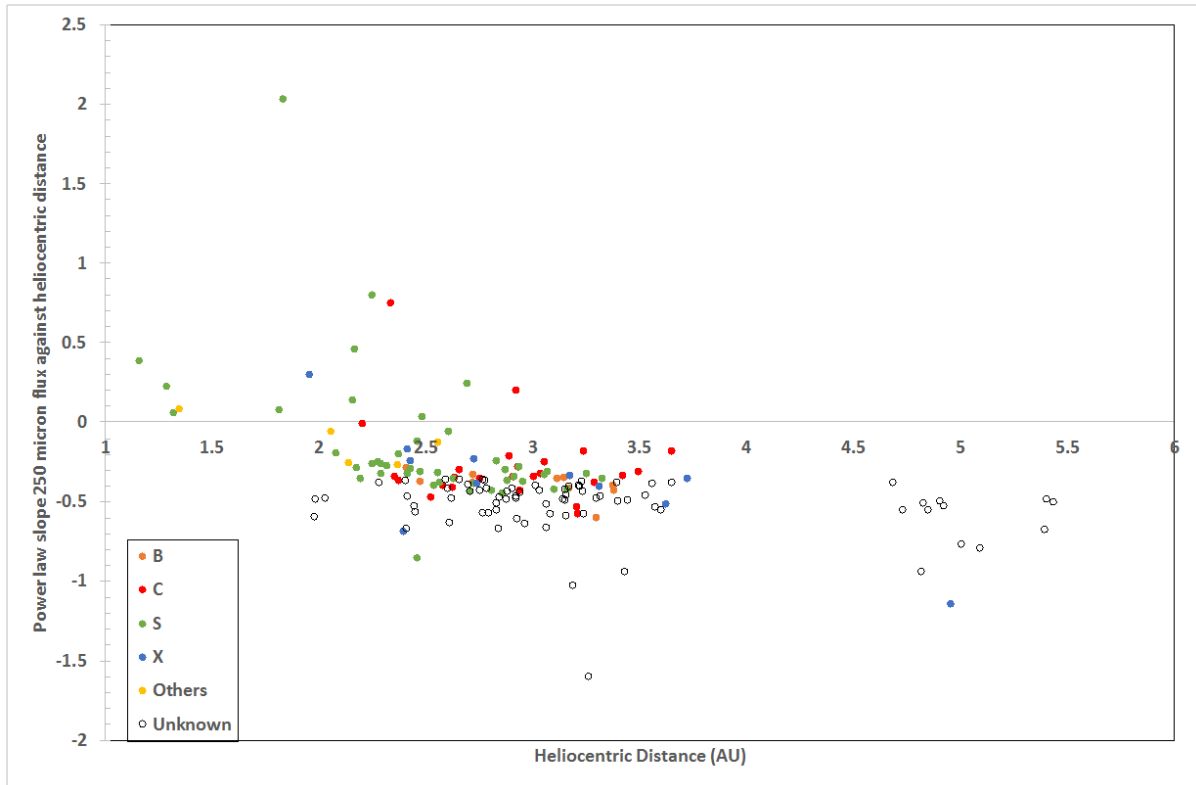


Figure 25: As Figure 24, but with the objects identified by taxonomic type. Only the main categories are shown, with the minor categories being grouped-together in a miscellaneous category. It is noticeable that the fraction of S-Type asteroids that show positive slope is $\sim 70\%$ - double their fraction in the sample as a whole, although this is within a small sample and thus subject to small-number statistics.

12. Conclusions

We have presented high quality data at 250, 350 and 500 microns, along with a wide range of ancillary information, for 1174 Solar System Objects found in 380 SPIRE scan maps obtained during the Herschel mission. The objects detected encompass the full range of scale in the solar system from Trans-Neptunian Objects to Near Earth Objects close to, or even inside the Earth's orbit.

The data have been reduced in a highly homogeneous way, based on the products of the Herschel-SPIRE Point Source Catalogue. The ancillary information includes dynamical and taxonomic classifications to permit sub-samples to be selected and examined for their macroscopic properties.

The aim is to present these data as a resource to researchers with a minimum of additional manipulation. This data is provided in the form of the tables and plots that compose this Explanatory Supplement, as well as in the delivery of a Highly Processed Data Product available within the Herschel Science Archive. The user will, undoubtedly, find many, more inventive ways to use this data.

We note that a small fraction of the objects seem to show unexpected thermal properties that may indicate a particularly large thermal inertia that permits an increasing thermal emission at larger heliocentric distance. These objects are limited to the inner part of the Asteroid Belt and show a strong excess of objects that are receding from perihelion, as opposed to approaching it. Similarly,

there seems to be a relative super-abundance of S-type objects and deficit of C-type among this sample. Above and beyond the twenty-seven objects that fulfil the heliocentric distance range criteria that we have set, there are more objects that show similar behaviour, but over smaller ranges of heliocentric distance.

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