SAG-4 Project Description

Evolution of interstellar dust (Herschel Guaranteed Time Key Project prepared by the ISM Specialist Astronomy Group of the SPIRE consortium)

The goal of the "Evolution of interstellar dust" guaranteed time key project (PI: A. Abergel & A. Zavagno) is to explore with Herschel the far-infrared (FIR) to submillimeter (submm) emission properties of dust particles in a wide range of regions within our Galaxy, from very diffuse clouds to sites of star formation and proto-stars.
Photometric data taken with SPIRE and PACS are complemented with spectroscopy using the FTS of SPIRE and PACS to derive the physical conditions of the gas from the lines of [c i], the high-level rotational lines of CO, and the major cooling lines of[c ii] and [oi]. The database of our project is developed and maintained at the Integrated Data and Operation Center (IDOC) at IAS.

L2.5 High level products for Spire Photometry are combined maps when multiple obsids are available, with Extended Emission Gain and Destripping applied.

Level2.5 High Level products for PACS Spectroscopy are the PACSMAN processed products (map fluxes).

Level2 cubes High Level products for SPIRE FTS are cubes with 3 different projections (Naive, NearestsNeighbour and Gridding)

File name key:

PACS_PHOT: begins with the object identifier, and contains a band identifier ("blue" = 70 microns, "green" = 100 microns, "red" = 160 microns).

SPIRE_PHOT: begins with the object identifier, ends with calibration information and band (PSW = 250 microns, PMW = 350 microns, PLW = 500 microns).

Calibration: "psrc" = standard point source calibration applied.

"extd" = correction from point source calibration to extended source surface brightness calibration.

"ExtEmiGainsApplied" = application of the bolometer relative gains, optimizing a map for extended emission.

PACS_SPEC: begins with the object identifier, ends with line (for example OI145 for [OI]145 microns), and a suffix for each version of the map:

Flux_raw.fits = raw cube, holes within the map were not filled, no smoothing was applied. Unit is wm-2sr-1 for the flux and error

Flux.fits = holes within the map were filled, no smoothing was applied. Unit is wm-2sr-1 for the flux and error

Flux_wm-2px-1.fits = raw cube, holes within the map were not filled, no smoothing was applied. Unit is wm-2px-1 for the flux and error

SPIRE_FTS: includes the object identifier, band (SSW = 194-313 microns, SLW = 303-671 microns), and information about the cube:

apodized = the data were smoothed in Fourier space with the extended Norton-Beer function 1.5.

supreme = a gridding and super-resolution method called SUPREME, http://www.ias.u-psud.fr/supreme/ , both smoothed and unsmoothed.

nearest (neighbor), naive, convolution, and gridding are different gridding/projection algorithms for making the spectral map within HIPE.