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Sent:	22 July 2005 10:40
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Subject:	Pointing

Hello all,

The pointing telecon was useful in clarifying some issues, but from our point of view there remain some important questions concerning the pointing, the optimum way of characterising the focal plane geometry in PV, and the impact of pointing behaviour on our observing modes which are currently being defined in detail (for example, the feasibility of gyro-mode when scan-mapping).

As discussed at the last Herschel Science Team meeting, we propose a dedicated meeting on SPIRE pointing to clarify all major pointing issues relevant to observing mode deifinition and scientific performance. At this meeting we can review and update the information and understanding concerning the bore-sight determination, and also address other issues.

If you agree, could you please confirm your availability during the period 30 Aug. - 16 Sept.

In the meantime, here are some comments and questions on
the telecon minutes:

1. In case there is still any confusion, we emphasise that note SPIRE-UCF-NOT-001818 (issue 2) is explicitly not about use of SPIRE Peak-Up mode. It has been re-written to remove all mention of peak-up, which is a separate mode designed to make autonomous pointing corrections prior to point-source photometry during routine operation.

2. Fixed pointing of the telescope during pointing
calibration:

The most suitable sources for pointing calibration are
planets and bright asteroids. Ephemerides for these
would be needed with the required accuracy (negligible sigma_pos). But there is a
question: since these objects move on the sky and have to be tracked, causing the image
to move on the star-tracker focal plane, will the star-tracker bias error be
potentially re-introduced during the measurement?

Is the statement "As the satellite is not moving, the
SRPE contribution in section 3.4 of [R1] can be deleted" correct for observations that
have to be tracked (specifically: Uranus, Neptune, or bright asteroids such as Ceres or
Vesta)?

3. Use of nodding:

The baseline SPIRE 7-point jiggle mode does include nodding.
If certain conditions are met, then during pointing calibration and focal plane
geometry definition in PV phase, it will be feasible to operate without nodding.
Drifts in the photometric offsets in the detector signals during the measurement must
be such that they are small or can be removed to a level that does not introduce
significant uncertainty. This condition is easiest to meet when the source is bright

(e.g., planet or
asteroid) and the observation time is correspondingly short.
It is our intention to carry out the focal plane geometry measurements in PV without
nodding if possible.

Action A2: Frequency content of APE

Thanks for the table summarising the contributions. In order to conduct simulations of
pointed and scanning observations, we need to generate a timeline of the pointing
offset with respect to the instantaneous commanded position, covering the duration of
the observation. This requires either a nominal example of such a timeline, or a
typical power spectrum from which such a time-line could be produced. It is not clear
that the information we have is sufficient to generate reliably such timelines.
(However, it would appear from your tables that David has sent that the fluctuations
are quite small, and indeed negligible for our purposes during system calibration.

Action A4: The difference between random and bias errors
is still somewhat unambiguous to us.

Sigma-stat is clearly random - i.e., if we were to repeat the measurement immediately,
it would not be correlated.

Sigma-rpe (random?): we assume that the drift during an observation is always in the
same direction but that we cannot predict in advance what direction it will be in. If
we were to repeat the measurement immediately, it might be in a different direction.

sigma-pos (bias?): the uncertainty in the source position
(the difference between it's catalogued astrometric position and its actual position)
would of course be the same if we repeated the measurement immediately.

sigma-srpe (bias): we assume that if were to repeat the measurement immediately, it
would be the same.

Cheers,

Matt and Bruce