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(2016-04-12, MiguelSanchez)

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Periods of anomalous pointing during the Herschel mission due to star-tracker switch-overs and lack of aberration correction.

Rationale

The pointing data of several ODs are affected by offsets due to two causes:

a. Switch from the main star-tracker (STR1) to the backup unit (STR2) either driven by the autonomous Failure Detection, Isolation and Recovery (FDIR) or commanded from ground for testing and calibrating the backup unit. This produces an offset of some 15 arcsec between the desired (nominal) and actually commanded coordinates.

b. Incorrect upload of the Spacecraft Velocity Vector (SVV) to the star-tracker (STR) resulting in a lack of light aberration correction in the coordinates of the STR guide stars. This produces a variable error in the range 0 - 20 arcsec between the desired (nominal) and actually commanded coordinates.

NEW In HCSS 13.0, the auxiliary processor that creates the pointing product was updated to automatically check for those events and apply the corrections whenever appropriate. However, this was only implemented for the "simple-corrected" attitude (column *simpleCorrFilterQuat*) and **not** for the "gyro-propagated" one (column *filterQuat*). Hence, the astrometry of the products retrieved from the archive (processed with the gyro-propagated attitude) are still affected by the problems outlined above.

If you have observations in one of the ODs referred below please contact the HSC Helpdesk for more information and support. Please refer to the HSC Helpdesk web link

The problem was been addressed in HCSS 14.0 . The tests performed indicated that the STR misalignment was not properly handled in early ODs (<= 113) and has been fixed in HCSS 14.1. (see SPR HCSS-20990). However, some issues still exist for a

small set of SPIRE parallel observations in OD 111 (investigation on-going). In case that you find any problem with the astrometry of your observation, please contact the [HSC Helpdesk](#).

STR switch-overs

OD	Duration (h)
44	0.0001
81	11.31
82	19.64
83	24.01
84	1.67
93	24.04
94	24.04
95	24.04
111	10.21
112	22.70
161	2.08
585	14.10
586	2.12
732	23.23
733	0.56

The **full list** of observations affected by STR switch-overs, *including science, calibration and engineering* ones can be found [here.](#)

SVV resets

OD	Last_DPT_update_TC_time (UTC)	First_SVV_update_TC_time (UTC)	Duration (h)
399	2010-06-16T16:43:53.432	2010-06-16T23:25:47.000	6.698
427	2010-07-14T16:02:01.681	2010-07-14T22:31:16.000	6.487
448	2010-08-04T15:21:47.767	2010-08-04T22:06:17.000	6.741
480	2010-09-05T18:07:30.264	2010-09-06T01:04:48.000	6.955
499	2010-09-24T17:51:15.752	2010-09-25T00:49:03.000	6.963
543	2010-11-07T17:15:11.854	2010-11-08T00:09:32.000	6.906
1308	2012-12-11T14:41:58.644	2012-12-11T19:56:45.000	5.246

The **full list** of observations affected by SVV resets, *including science, calibration and engineering* ones can be found [here.](#)

-- Miguel Sanchez - 2015-12-15

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