

# Radiation Environment & Glitch Rates on Ge:Ga detectors

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## Content

- Summary of analyzed observations
- Radiation Environment
- Selected spikes on Ge:Ga raw ramps
- Glitch rate evolution during the mission
- Conclusions and open issues

## Calibration Observations

- The source of the "rotating" raw Ge:Ga detector data are the spectroscopy orbit prologue measurements: PaccEng\_Spec\_spu\_setup\_wait\_reset (typically >2700sec)
- Proposals: PVSPECSetup and RPSPECSetup

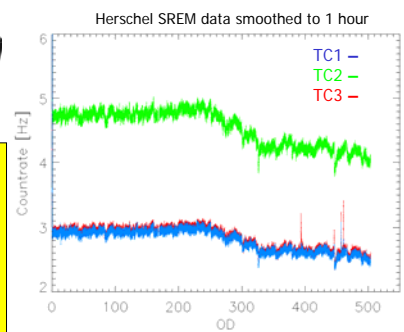
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**OD** = [90, 115, 127, 133, 140, 141, 142, 146, 147, 154, 155, 165, 166, 170, 173, 175, 178, 182, 183, 194, 195, 196, 208, 211, 222, 225, 230, 235, 238, 245, 248, 253, 262, 272, 273, 276, 286, 289, 290, 303, 304, 316, 319, 322, 323, 327, 330, 335, 345, 348, 370, 373, 376, 384, 387, 388, 389, 396, 405, 408, 409, 415, 418, 440, 454, 457, 460, 471, 482, 485]

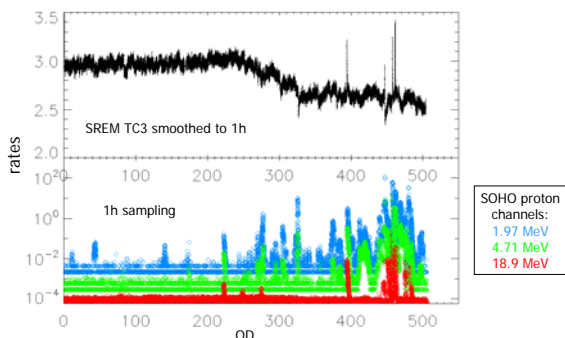
## Herschel Radiation Environment



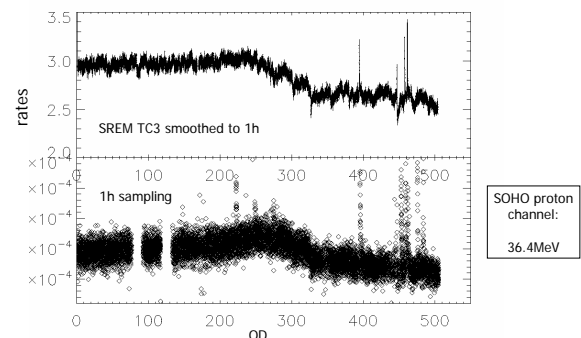
SREM Count rates slightly increased from launch to OD240, followed by a rapid decrease by ~15% until OD330. On average about constant since then, apart from a few significant solar events.

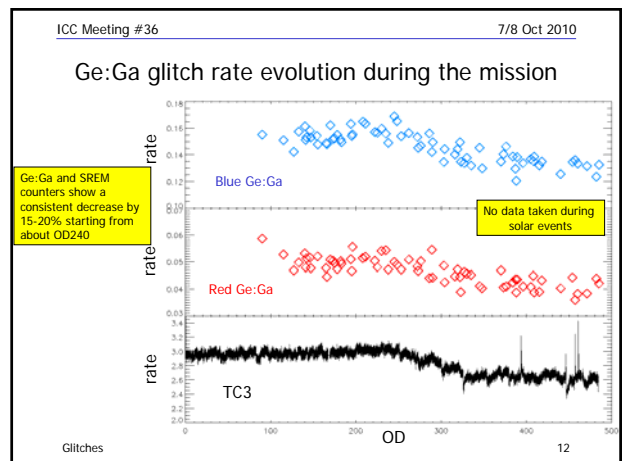
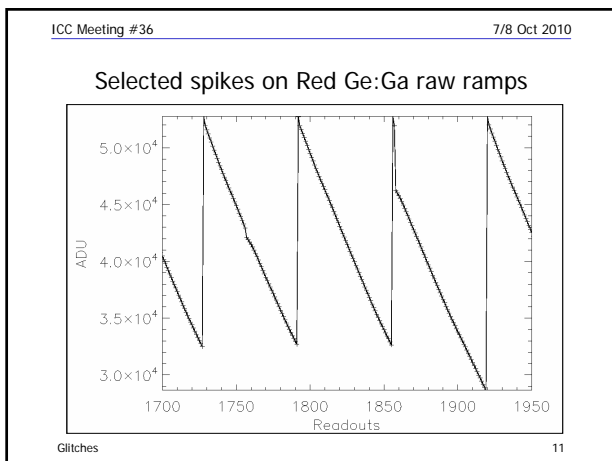
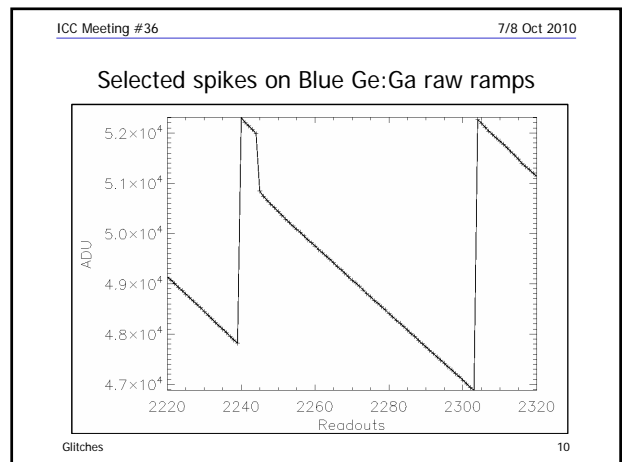
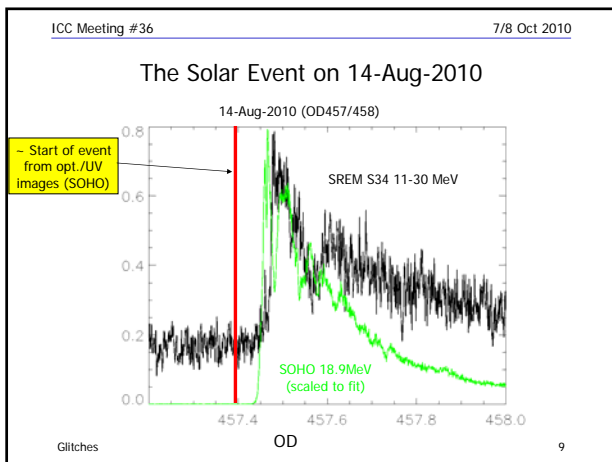
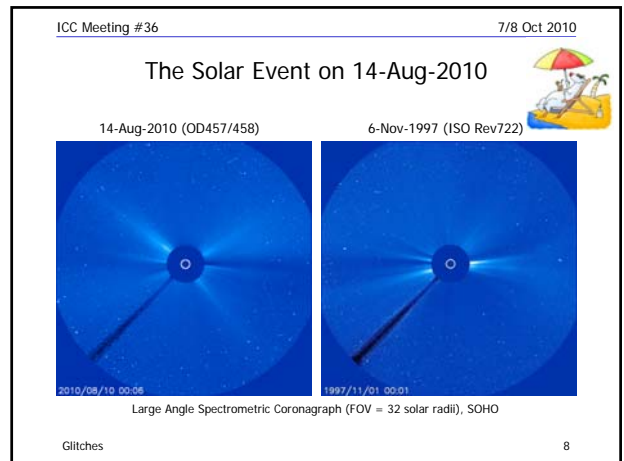
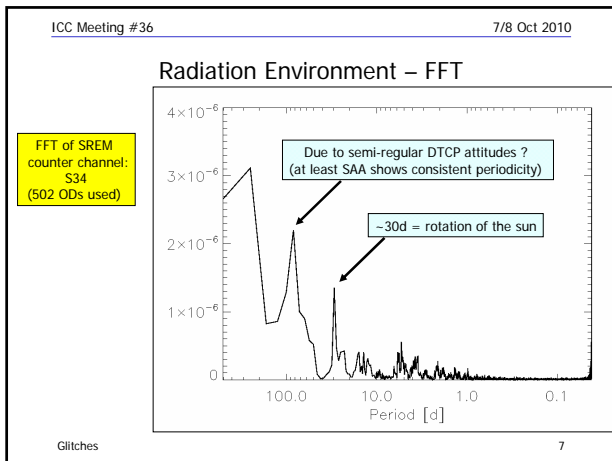


## Radiation Environment – Comparison with SOHO

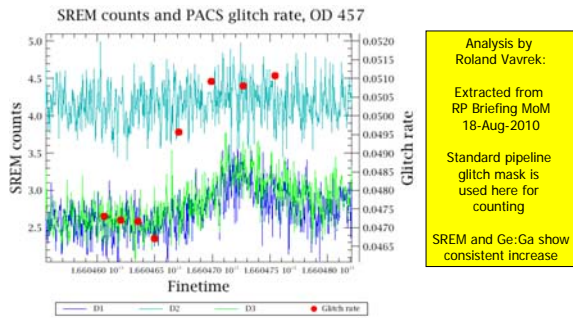


## Radiation Environment – Comparison with SOHO





## Ge:Ga glitch rate during the 14-Aug-10 solar event



Glitches

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## Conclusions and open issues

- The relative variation of radiation hit rates on PACS Ge:Ga detectors is quite similar and consistent to the SREM TC1 and TC3 counters.
- Only few significant (but still modest) solar events seen by Herschel so far, .... it could have come worse 😊
- Continue analysis of rotating raw channels in spec prologues
- No analysis yet of single raw channels from all observations

Glitches

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