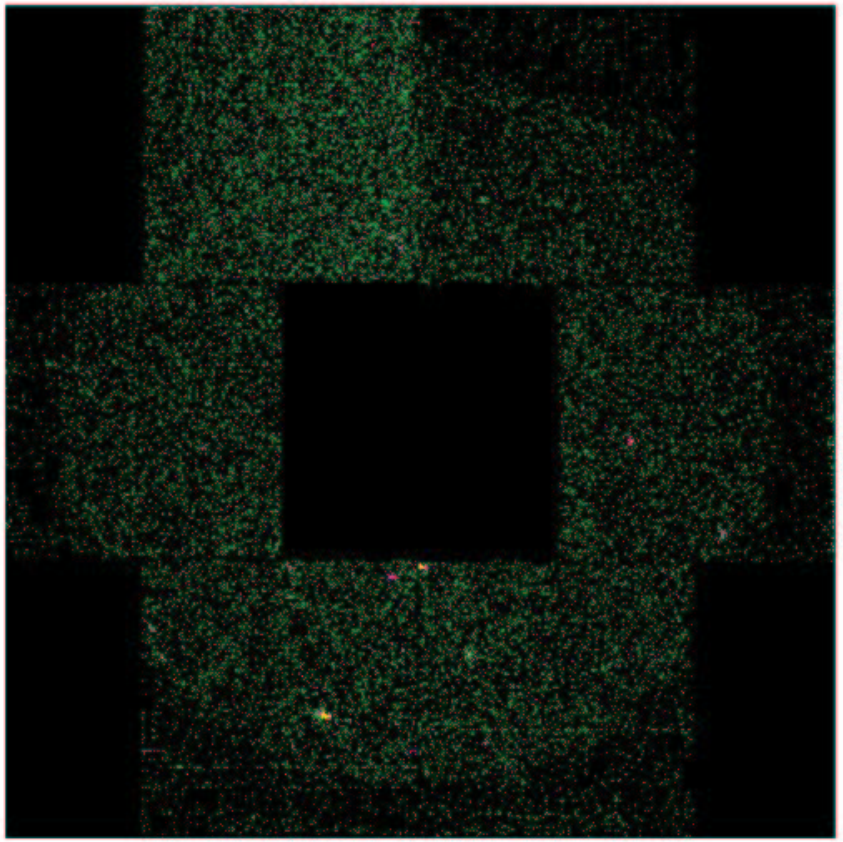
MOS2 CCD5 anomaly

Status of the investigations.

Detection of the problem

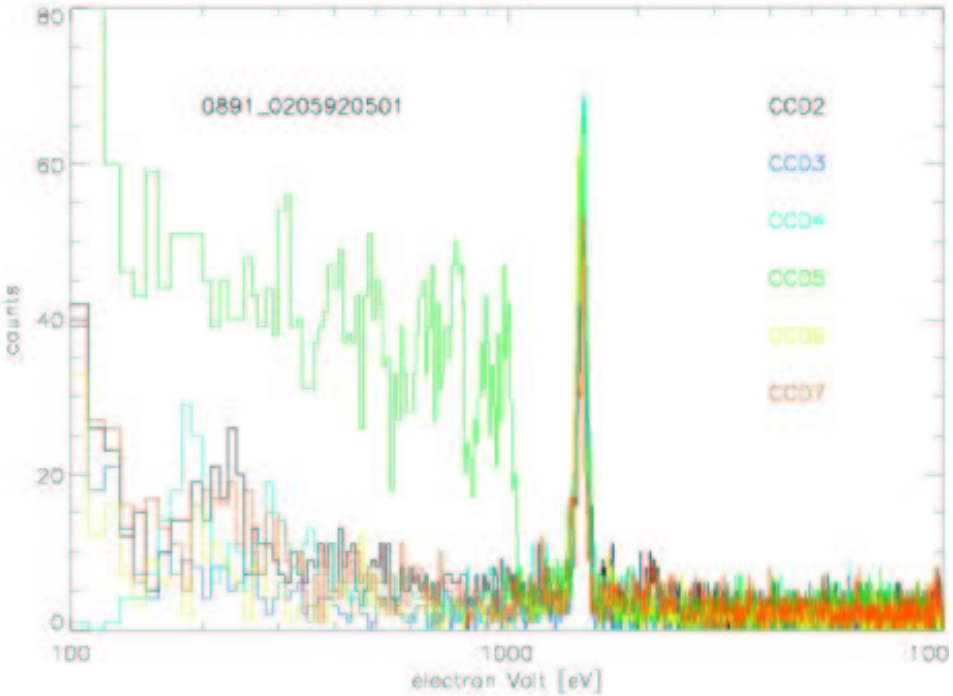
- Maite Ceballos and Jean Ballet discovered a large excess of counts <1 keV in MOS2 CCD5.
- Effect stops abruptly at about 1keV.
- Effect appears quite often.
- Jean Ballet informed ESAC.

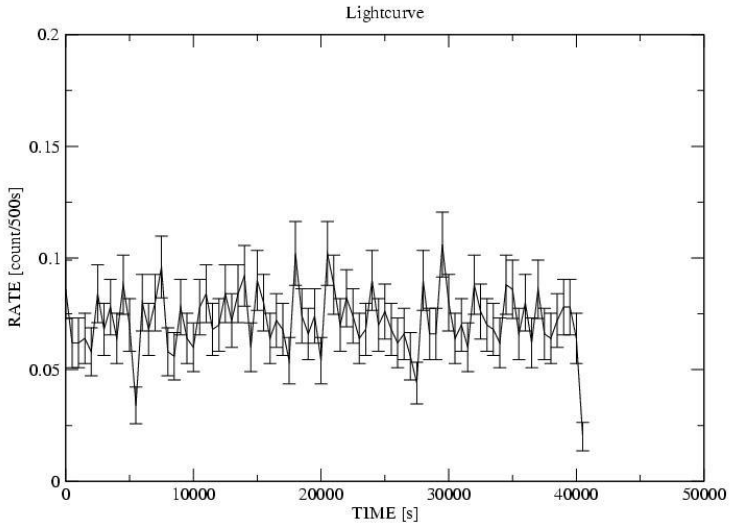


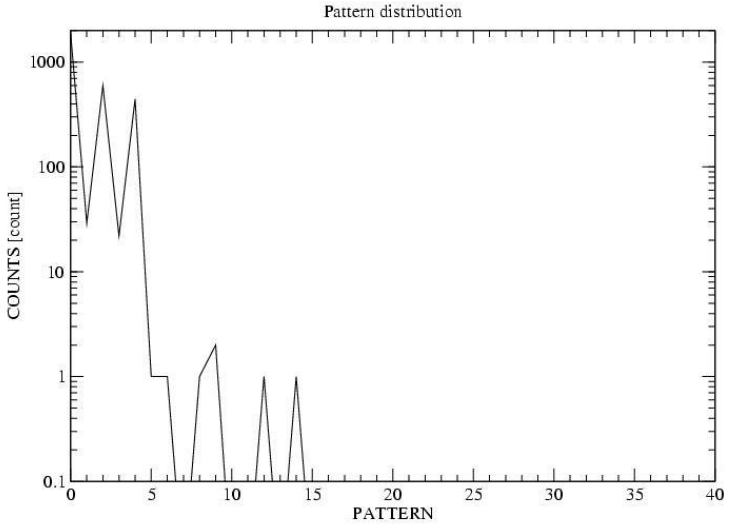
Rev. 891: MOS2 - 200-500 eV

Facing the beast

Out-FOV region MOS2 CCD5



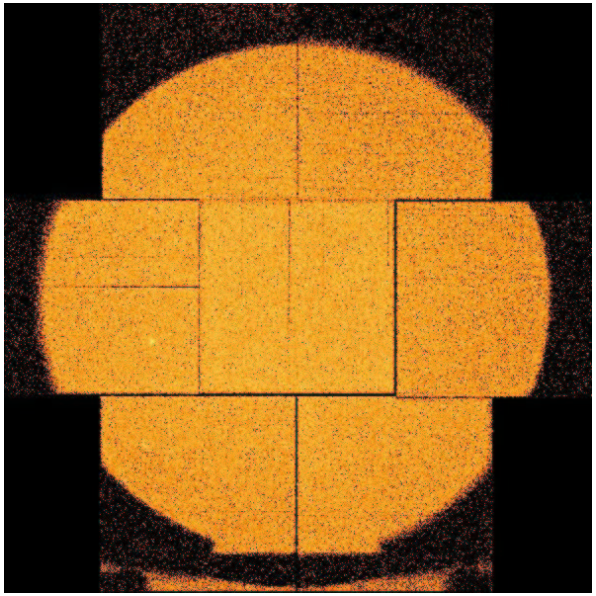


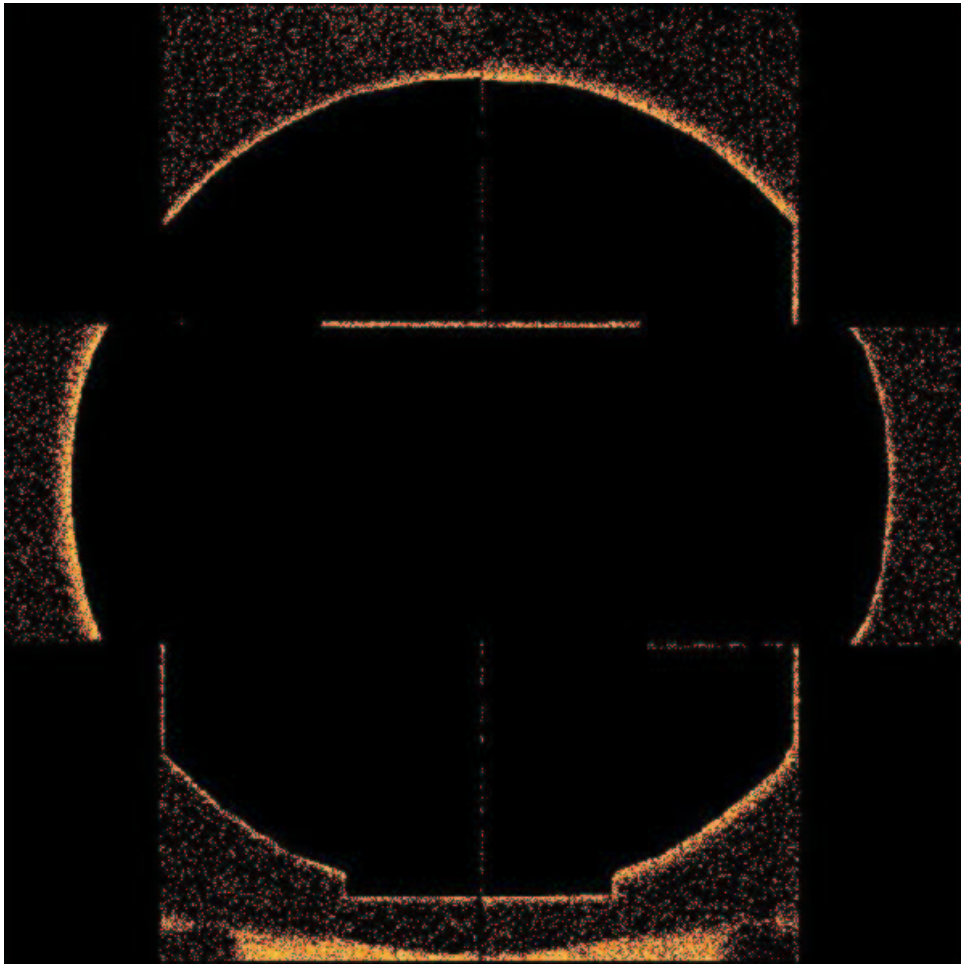


How to find other observations

- Compare CCD5 count rates with rates of other peripheric CCDs.
- Analyse out-FOV area to exclude effects of different sky regions (field sources) and backgrounds.
- Compare count rate ratios of individual CCD to the mean count rate to avoid wrong detections due to border effects of out-FOV area.
- Exclude 2 CCDs with highest count rates from mean count rate.
- Verify that this scheme is working correctly.

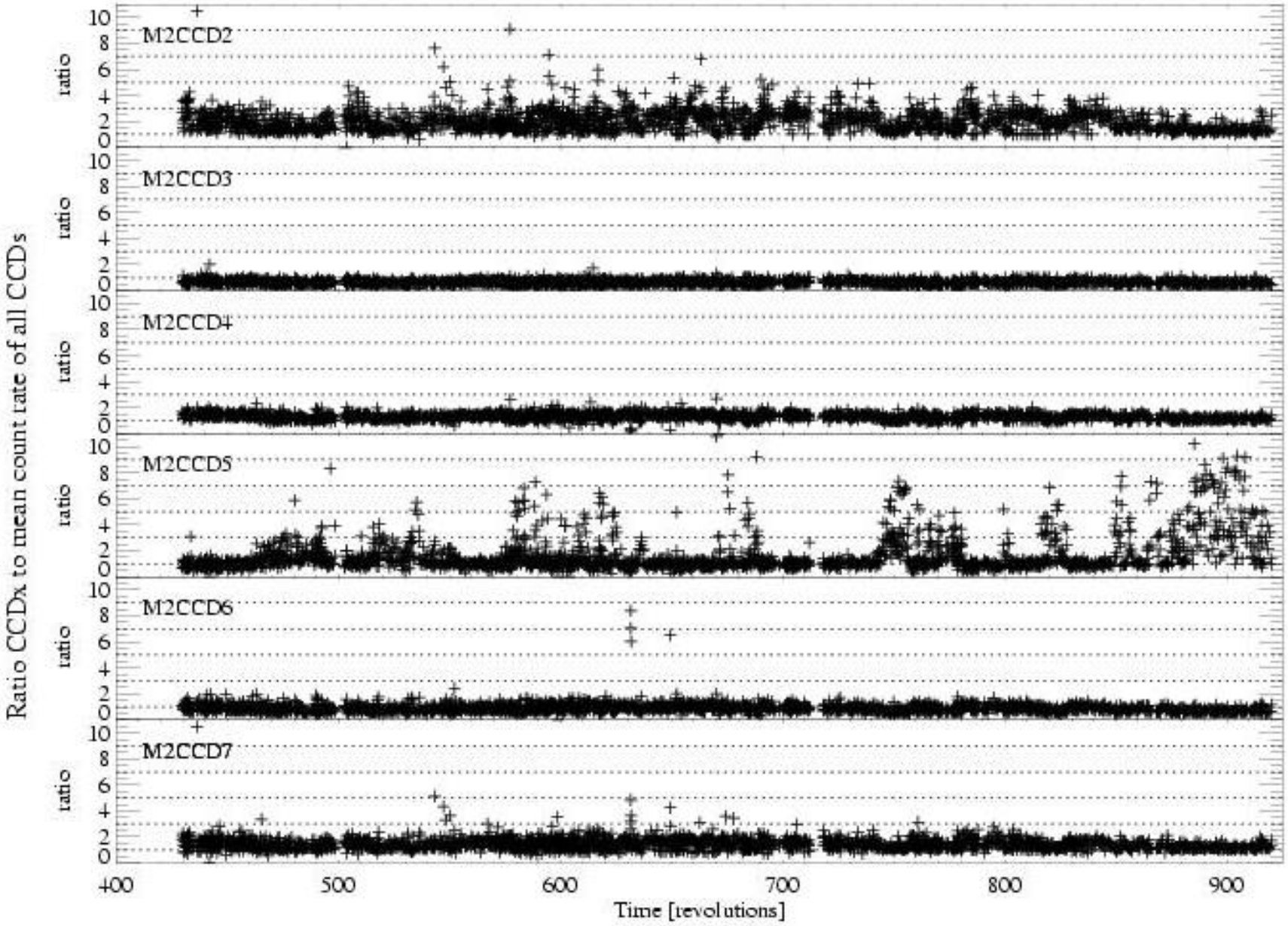
Out-FOV border effects



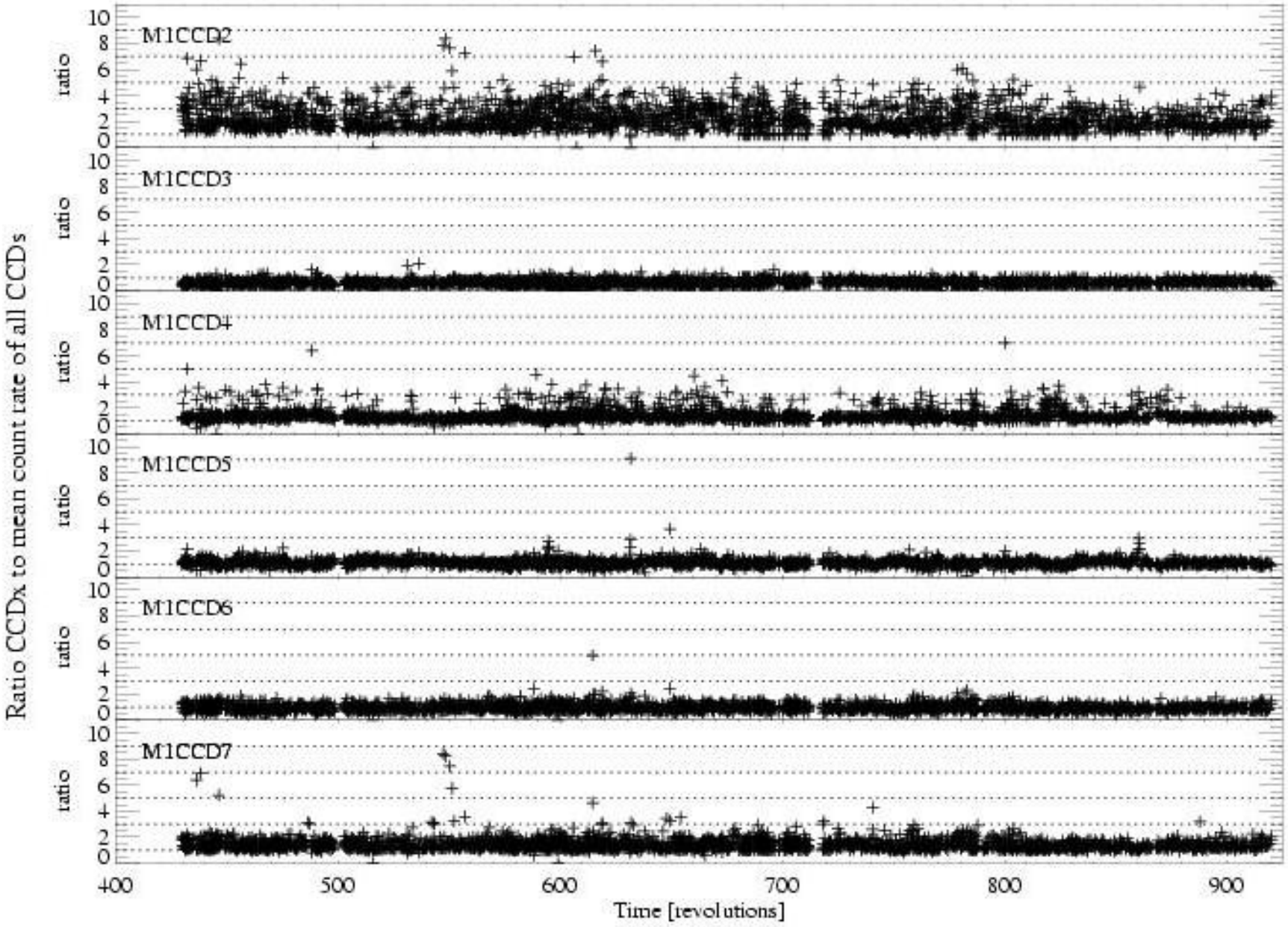


Rev. 919 MOS2

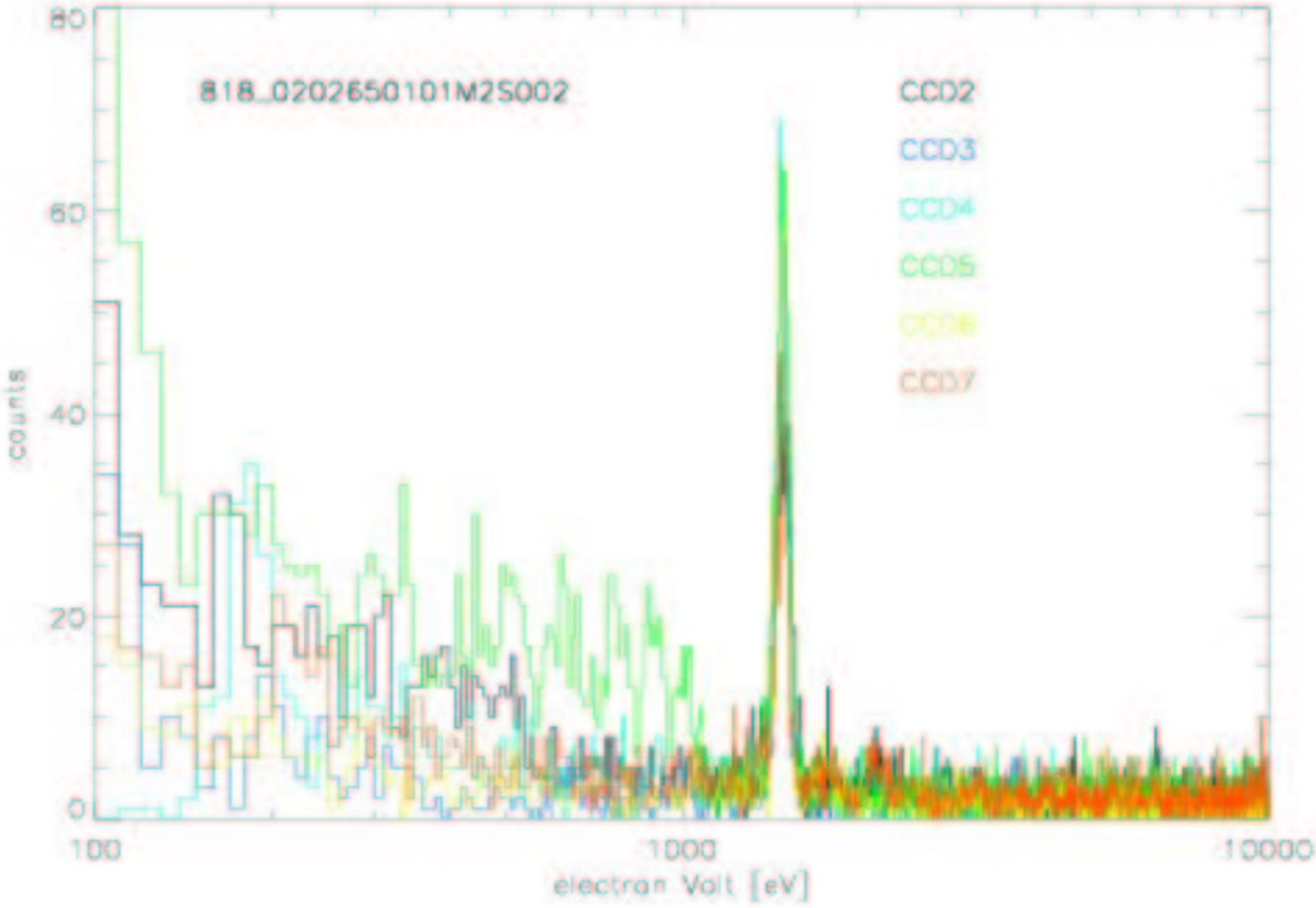
Scanning the archive: MOS2



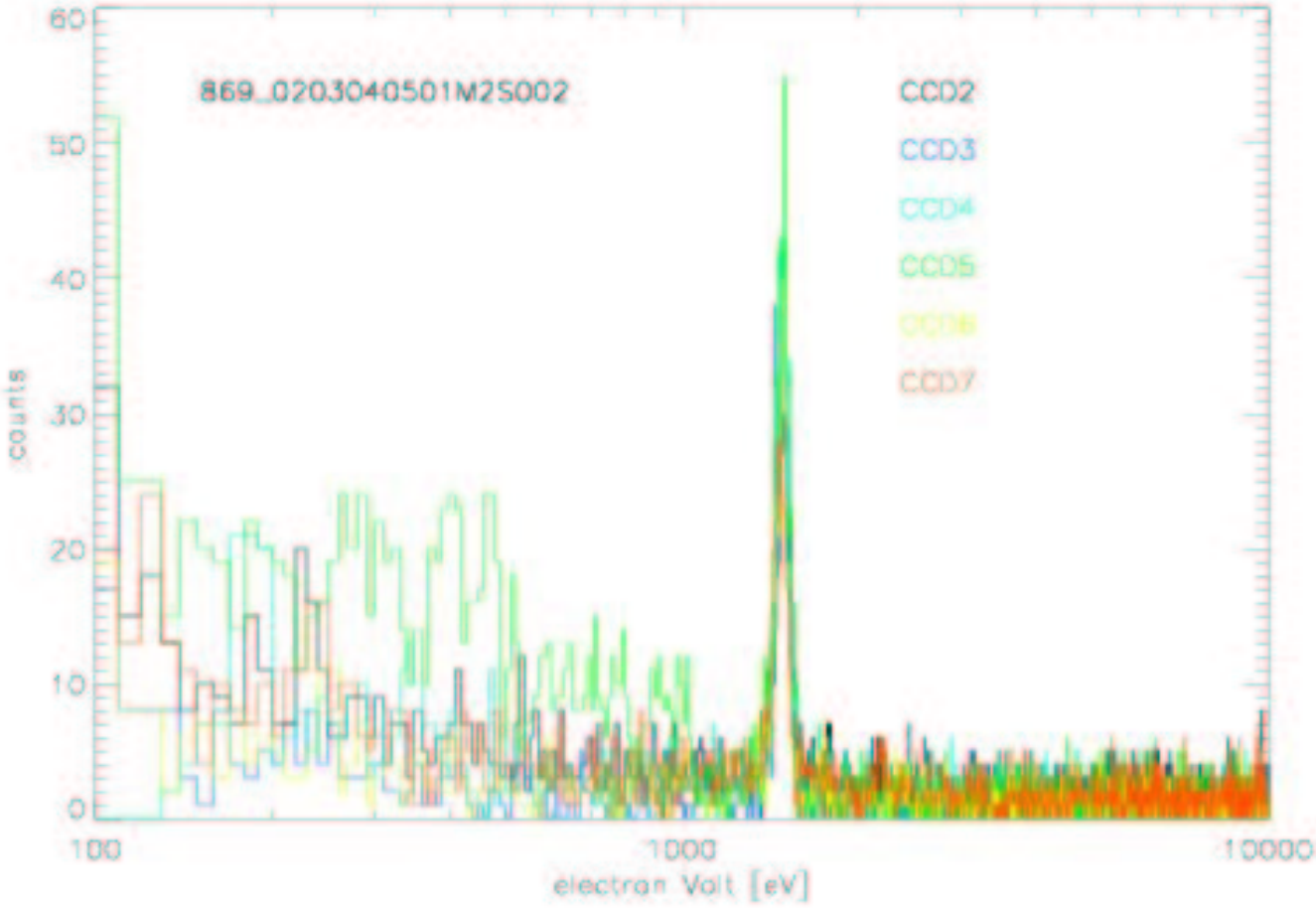
Scanning the archive: MOS1



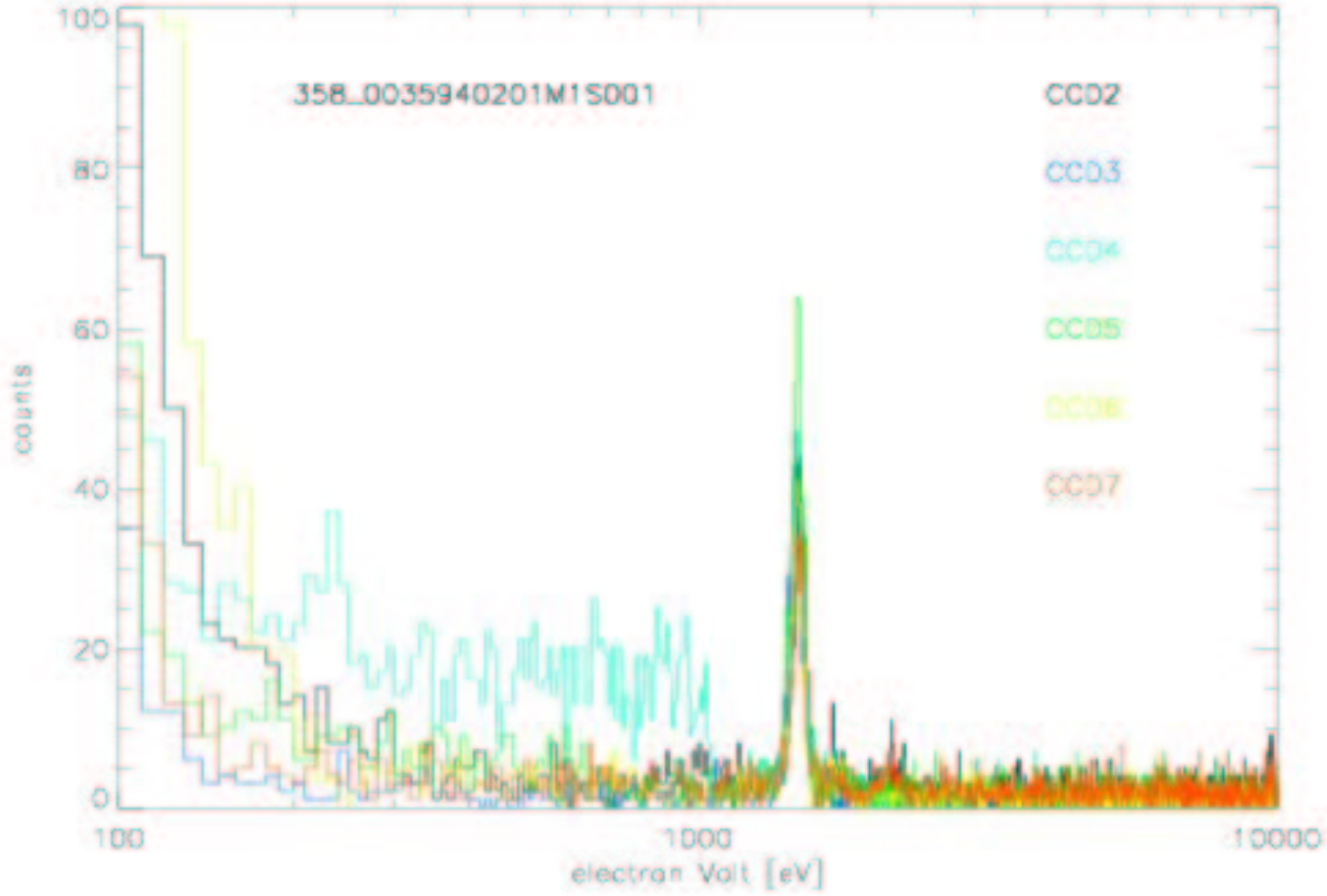
Examples: MOS2 CCD5 + CCD2



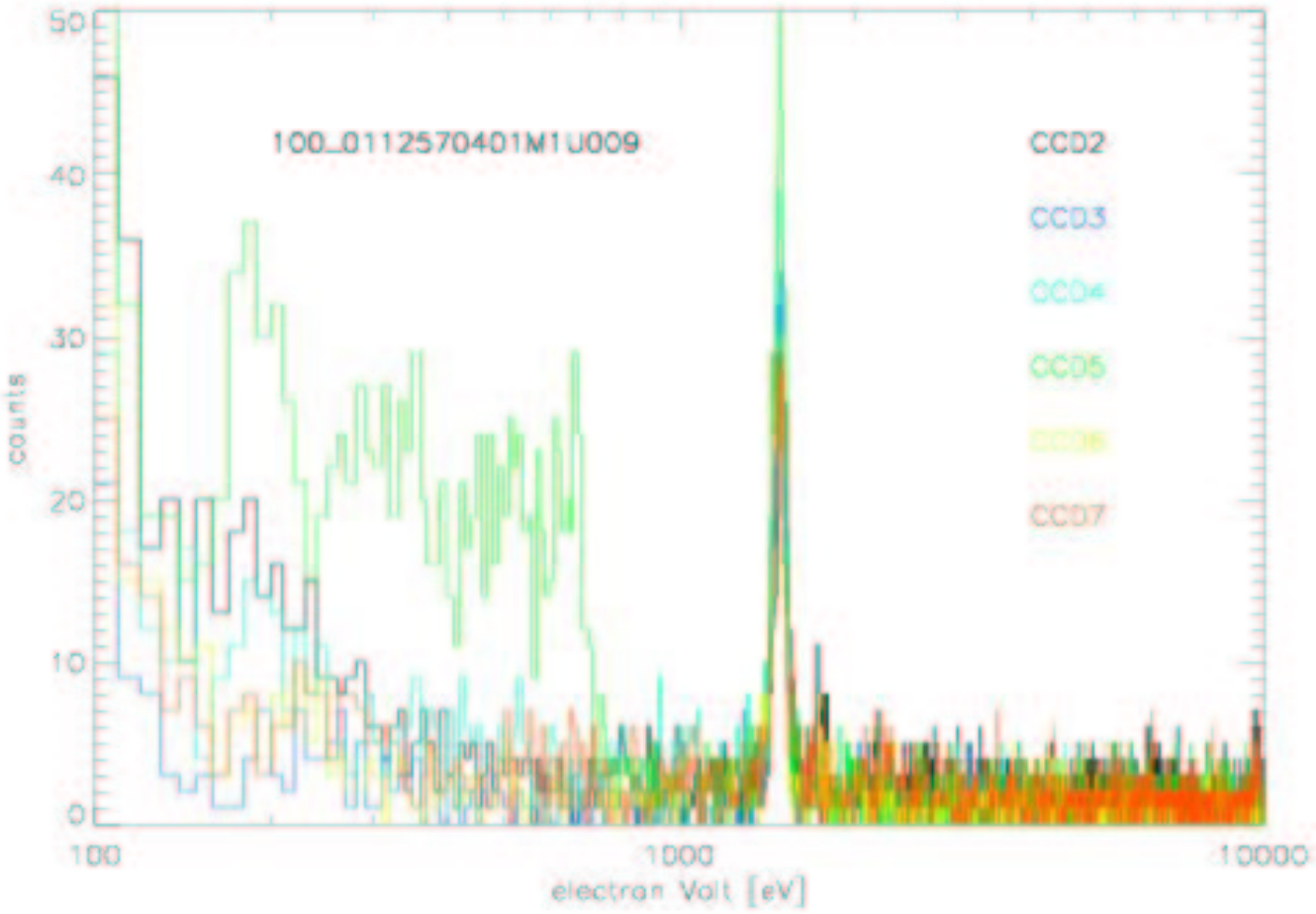
Examples: MOS2 CCD5 with 2 steps



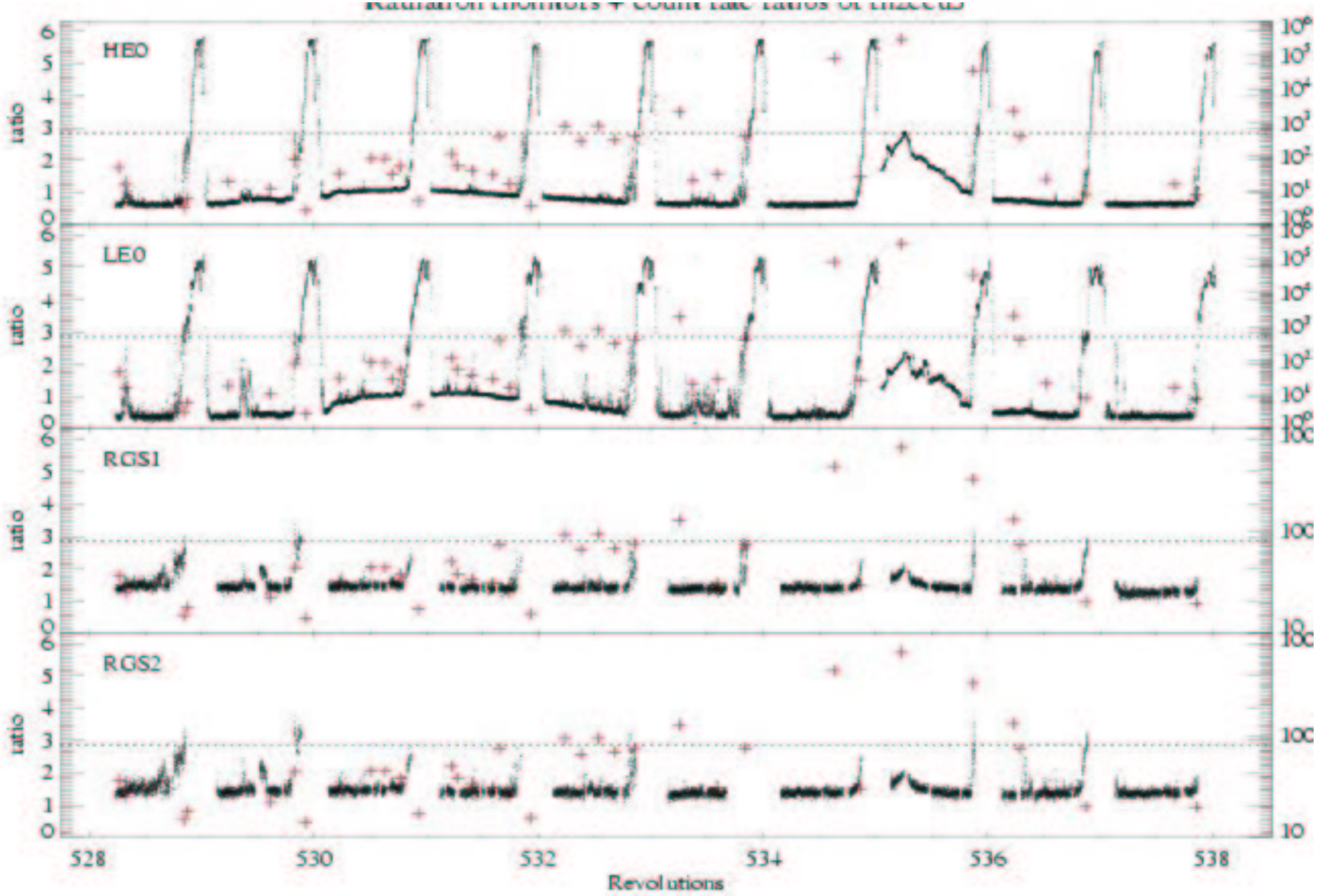
Examples: MOS1 CCD4



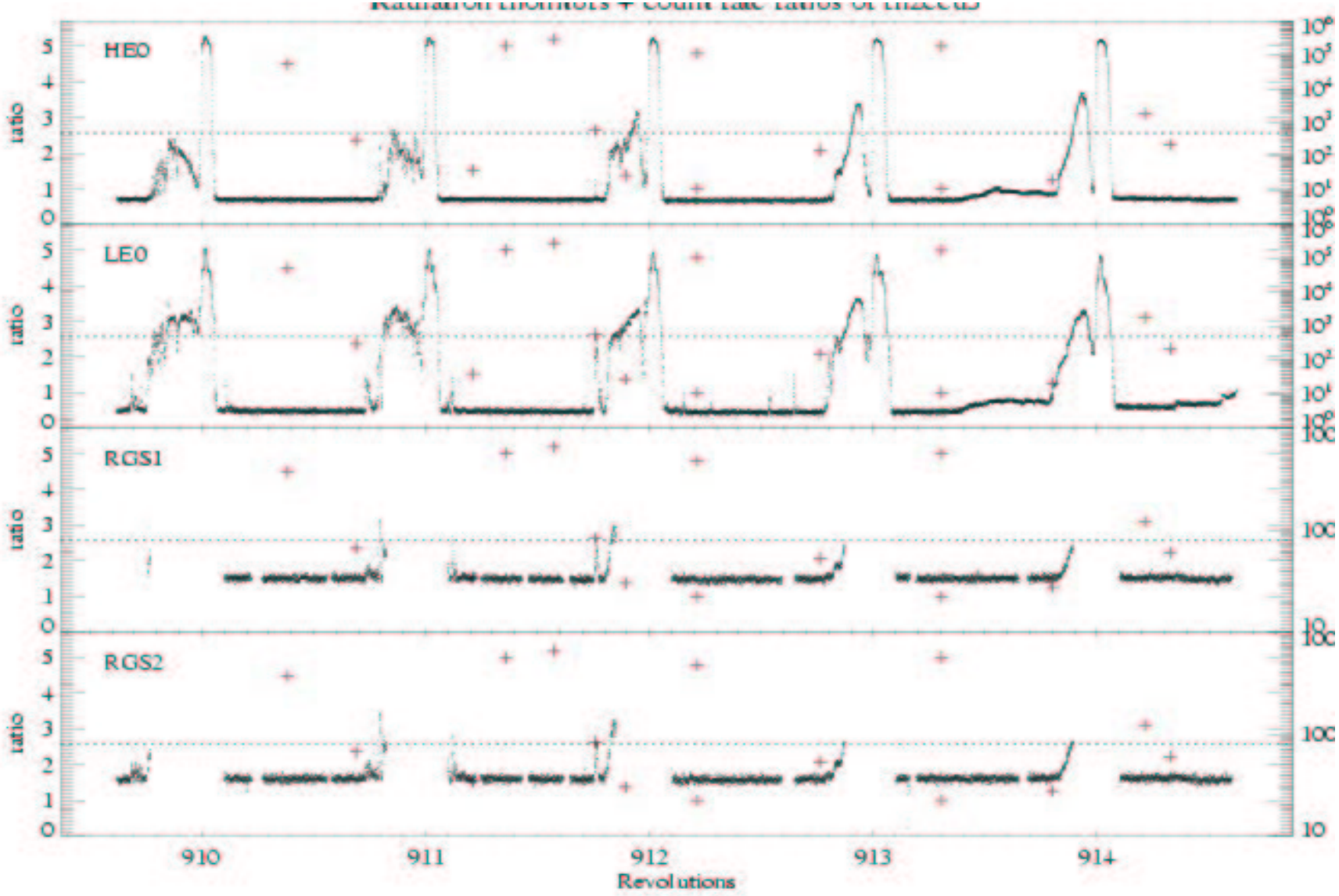
Examples: MOS1 CCD5



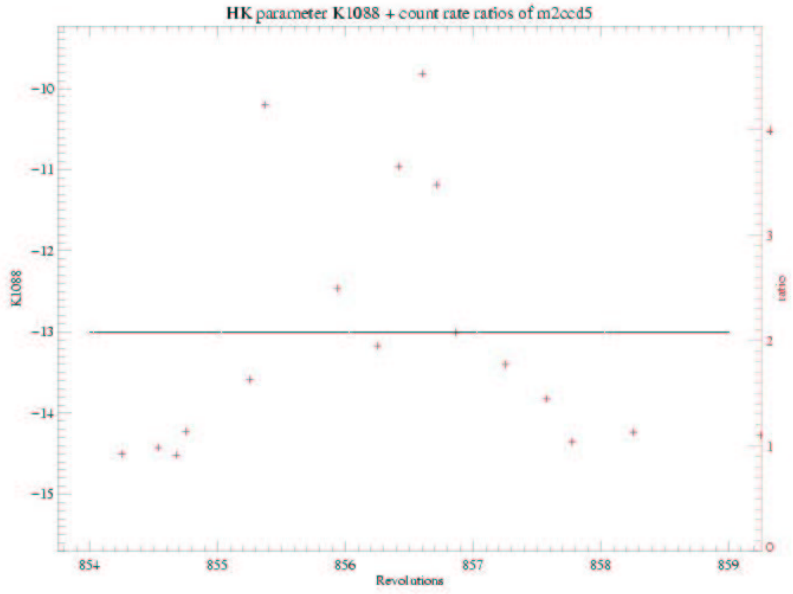
Triggered by high radiation?

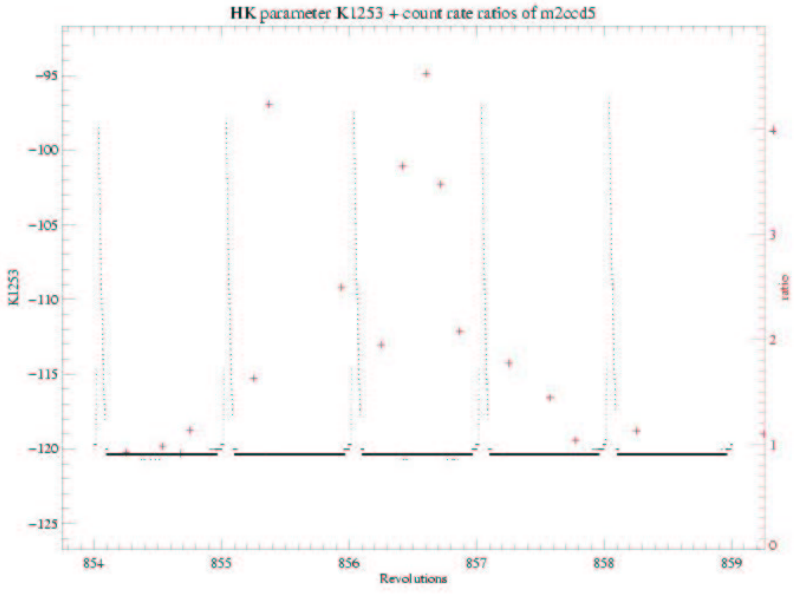


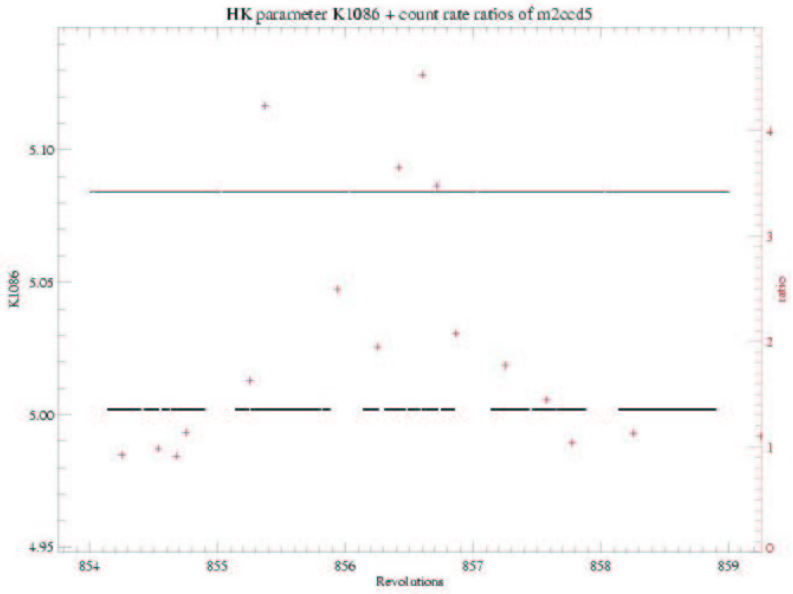
Triggered by high radiation? Unlikely!

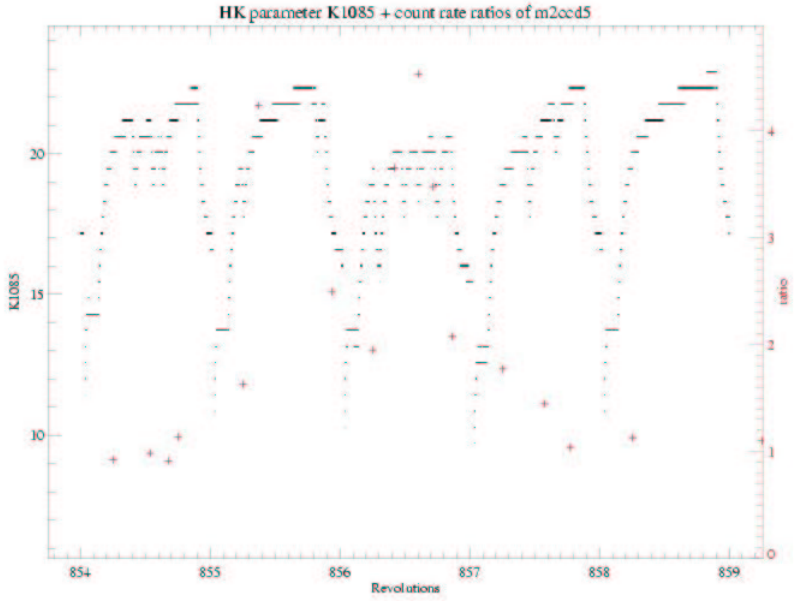


Search for correlation with HK parameter









Conclusions

- MOS2 CCD5 effect is present from begin of the mission.
- (Short) phases in the past, continuously present since rev. 874.
- Effect also found in other CCDs of MOS1 and MOS2.
- So far no switch on/off detected within an observation.
- No occurrence of strange event pattern.
- No correlation with radiation monitors.
- Started to correlate with HK parameters.
- Perfect addition to the EPIC anomaly gallery.