

# EPIC calibration monitoring and improvements over the last year

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# EPIC: Instrument Operations

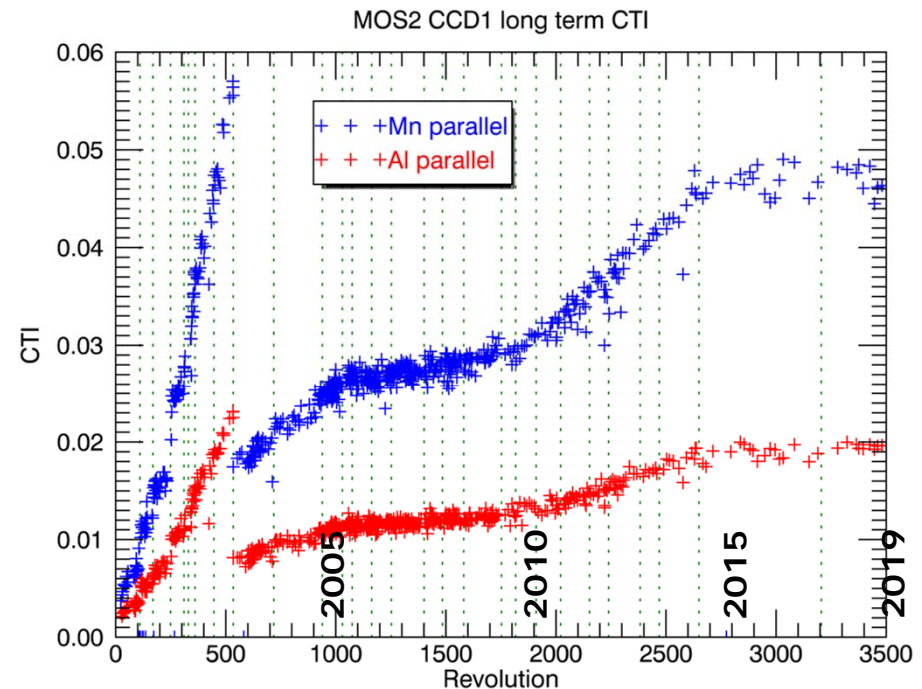


- Smooth instrument operations over the last year.
- In general, instruments are functioning nominally.
- No major events to report.

# EPIC-MOS: CTI/ADU CONV CCF Update

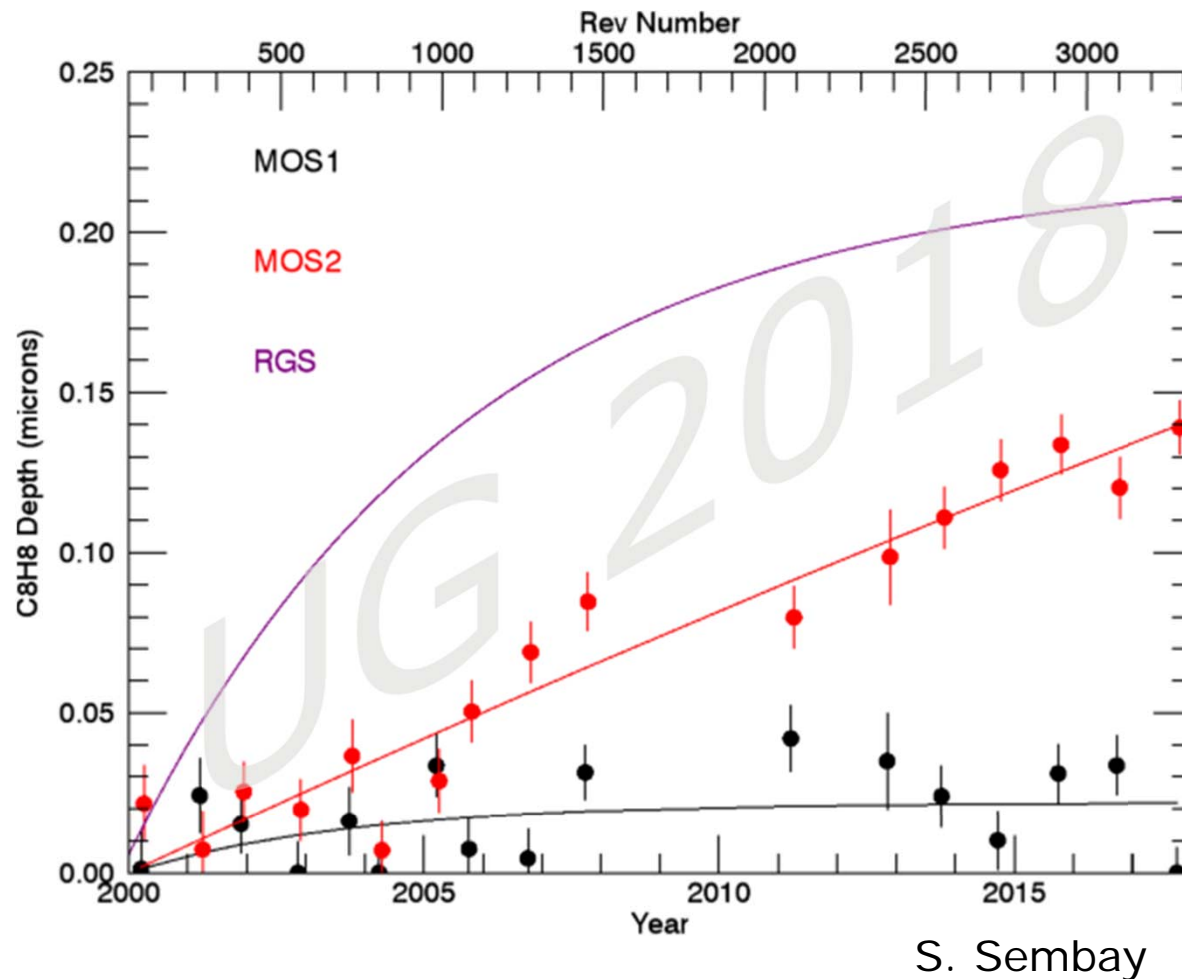


- Line monitoring revealed drop of reconstructed line energies for all CCDs of both MOS cameras.
- New most recent CTI/ADU CONV epoch defined for both MOS cameras.
  - MOS1: 25 epochs
  - MOS2: 28 epochs
- Energy scale is now accurate again to  $< 5$  eV for all CCDs.
- Details of new epoch in CTI/ADU CONV CCF release notes:
  - XMM-CCF-REL-363/364 (M. Stuhlinger, 22. March 2019)





# EPIC-MOS: Contamination Monitoring



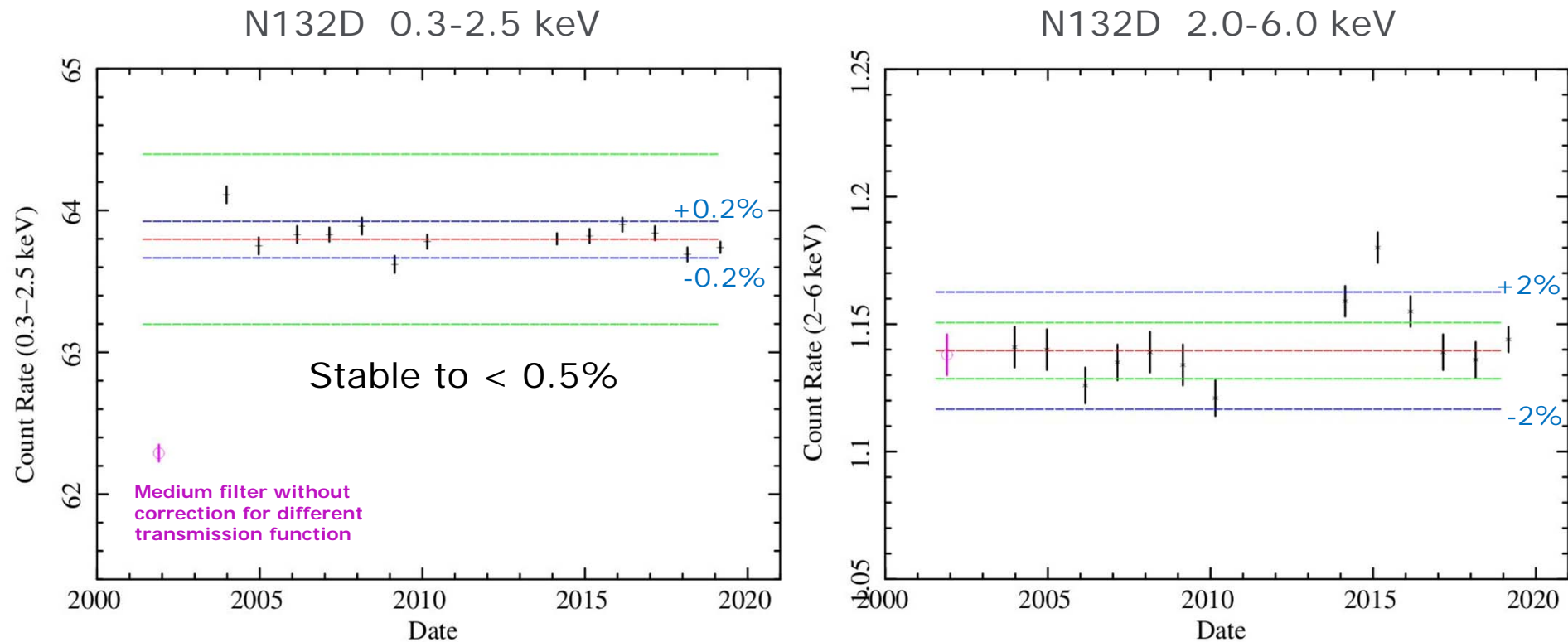
Primary monitoring source:  
SNR 1E0102.

Meantime one additional  
observation available. Not  
yet updated.

Contamination status 2018  
shows no change in trend:

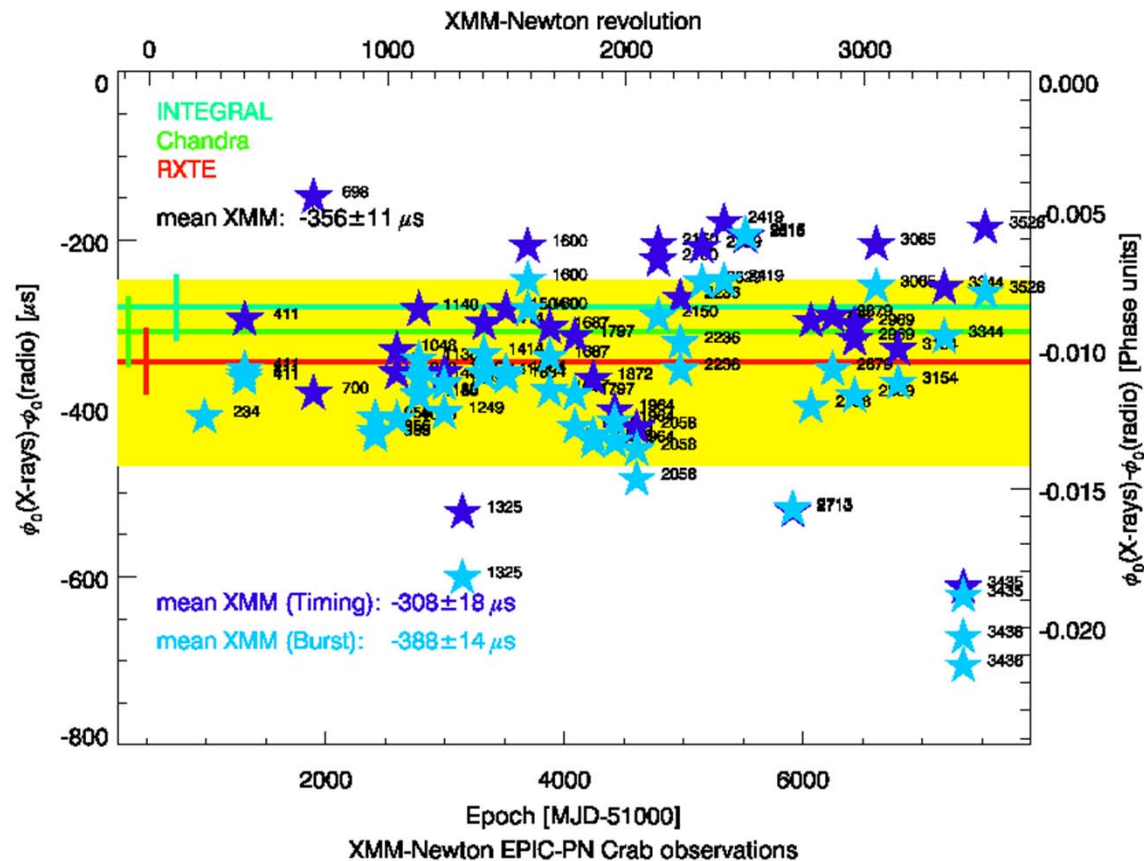
- MOS1 stable
- MOS2 steadily increasing  
(~ 14 % eff. area loss @  
0.5 keV in 2018)

# EPIC-pn: Stability Monitoring



- Details in R. Saxton, 2019, XMM-SOC-CAL-TN-0212.

# EPIC-pn: Absolute Timing



- With respect to Jodrell Bank radio ephemeris of the Crab.
- Details in J. Ebrero, 2019, XMM-SOC-CAL-TN-0220.

Mode	Pulse delay ( $\mu\text{s}$ )
Timing	$-308 \pm 105$
Burst	$-388 \pm 102$
Total	$-356 \pm 110$