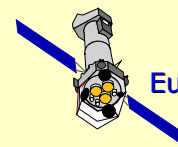


Long term EPIC in-orbit calibration plan

Marcus G. F. Kirsch



Current situation

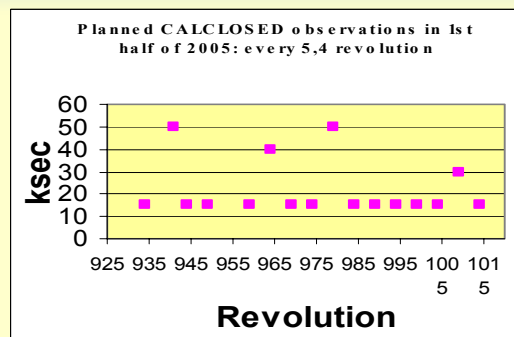
- CALCLOSED every 5.4 revs

550 ks ~ 2 % of XMM time

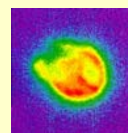
- Targetes:

- 1E0102 (2/year 30 ks)
- N132D (2/year 30 ks)
- RXJ1856 (2/year 35 ks)
- Crab (2/year 15 ks)
- PKS2155 (1/year 30 ks)

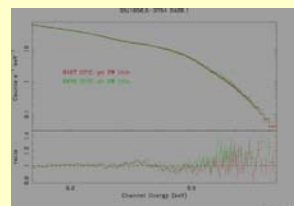
250 ks (+100 ks OH) ~ 1.5 % of XMM time
+ NRCOs



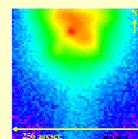
- gain monitoring
- CTI determination



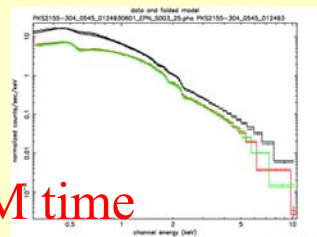
- gain monitoring
- CTI determination
- flux stability



- low energy flux stability



- timing

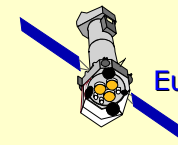


- Chandra cross cal



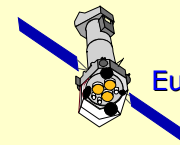
future CALCLOSED strategy

- Meeting: 05-11-2004 to evaluate the the possibility of using slews for CALCLOSED
- Decision:
 - period of 2 months to perform slews in CALCLSOED
 - Until a decision is taken about any modified approach ALL CALCLOSED currently mandated for execution in the Science Window will continue to be executed nominally.
 - Even when we have determined a new scenario we will need the current and future CALCLOSED strategies running in parallel for some months of evaluation.
- test period still running
- data need to be evaluated



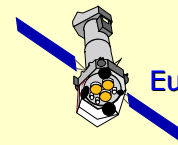
CALCLOSED test period

- Use all slews longer than 15 min
- On average:
 - MOS: 4 ks/revolution in FF
→ 740 ks per year
 - pn: more often different modes from FF are used: 2.5 ks/revolution in FF
→ 450 ks per year



future CAL-target strategy

- many variations in setting to establish calibration of different modes/filters etc.
→ lag of a profound set of reference measurements with exactly the same setting
- IT IS NOT TOO LATE ...
- establish for the coming XMM years a basic set of NOT changing observations that guarantee tracking of possible
 - contamination
 - redistribution changes
 - all we can think of ☺
- perform in addition calibration observations for special calibration issues



future possible situation

- CALCLOSED
 - MOS using slews
 - pn and MOS: parasitically long calclosed on RGS cal targets (every 2 month)
 - no dedicated CALCLOSED ????



- gain monitoring
- CTI determination

0 ks

- Targets with **FIXED** setting:

- 1E0102 (2/year 30 ks) TBD
SW thin, SW medium
- N132D (1/year 30 ks):
SW thin, re-center to SW pn, MOS in LW
- Vela FF thin 60 ks (1/year)
- Tycho 1 per year TBD 30 ks



- flux/gain stability

SNRs always same Roll angle, same time of the year



- low energy flux stability

- RXJ1856 (2/year 35 ks):
SW thin



- redistribution

- Zeta puppis SW thick(RGS target)



- timing
- flux stability thick filter

- Crab (2/year 15 ks):
Burst/Timing/Burst thick filter



- Chandra cross cal

- PKS2155 SW medium (1/year 30 ks)

310 ks (+130 ks OH) < 2 % of XMM time

+ **NRCOs** (H1426 1 per year with Chandra 90 ks)

