

Meeting date	06.-07. 10. 2007	ref./réf.	XMM-SOC-CAL_EPIC-MIN-0019	page/page	1 7
<i>date de la réunion</i>					
Meeting place	Mallorca	chairman	S. Sembay		
<i>lieu de la réunion</i>		<i>président</i>			
Minute's date	19.11. 2007	Participant			
<i>dates de minute</i>		Andrea Tiengo Andy Read Eckhard Kendziorra Konrad Dennerl Vadim Burwitz Michael Freyberg Silvano Molendi Wolfgang Pietsch Chris Tenzer Steve Sembay Ulrich Briel Marcus Kirsch Tony Abbey Richard Saxton Steve Snowden Herman Marshal Paul Plucinsky Jenny Carter Jonathan Gimeno Nicola La Palombara Guillermo Buenadicha (partly) Pedro Calderon (partly) Mauro Casale (partly) Ramon Munoz (partly) Jim Martin (partly) Maria Santos-Lleo (partly)			
Subject/objet	EPIC CAL Meeting 19	copy/copi	Minutes by M.Kirsch		
		<i>A.Parmer</i>			

1 EPIC calibration

1.1 Reports on NRCOs (Steve Sembay)

- NRCO 64 – NGC 7172:
 - level of redistribution is ok
 - redistribution shelf in qualitative agreement with Seyfert 2 soft x-ray scattering model
- NRCO 67 - RXJ 1856
 - patch still seems to be changing for MOS1
 - for MOS2 stable after around rev 800
- NRCO 68 - REJ2248
 - off axis broad band X-cal between PN and MOS in agreement with on axis results, except for soft band in MOS1 (RMF effect)

1.2 MOS 3x3 Pattern Calibration (Jenny Carter)

- Using pattern ratios of 3x3 and normal readout to rescale the QE
- Changes will be reflected in the QE CCF (QE and pattern fraction)

1.3 Energy Calibration using SNR (Andrea Tiengo)

- Using 1E0102, N132D, CAS-A, Tycho to compare line positions (time, rate)
- Energy resolution is stable in time
- Gain stable in MOS, but fluctuations in pn
- No significant rate dependence

1.4 EPIC-MOS Life test facility (Tony Abbey)

- Reproducing the MOS patch in the laboratory
- Repeating experiment with correct flux (last time irradiated with to high flux)
- CCD hat to be annealed before (heating and UV annealing)
- After 80 % of the full XMM dose so far no significant change in spectra or dark current

1.5 pn rate dependant CTI/gain correction (Marcus Kirsch)

- standard CTI correction is not perfectly modelled re rate dependency (now consistently confirmed)
- effect can be fitted by geometric function
- correction underway
- need to check also frame/real time effect that is currently calibrated for frames for all modes, but could be changed

1.6 Long-term trends in pn energy response (Konrad Dennerl)

- Ventilation hole CTI improvements have no significant effect on data
- Long term CTI needs to be changed (different for eFF and FF)

1.7 EPIC-pn FIFO resets handling (Michael Freyberg)

- SAS 7.1 includes time-dependent correction of FIFO exposure losses
- Relevant for bright sources TI mode or high background (FF eFF LW modes)
- Not relevant for SW mode
- CCF values may need to be tuned

1.8 Update on EPIC-pn time-jump handling (Michael Freyberg)

- Acceptance threshold (margin) of time jump vs jitter: environment variable SAS_JUMP_TOLERANCE, in FTFINE units
- Iterating + testing + fine tuning : to make sure that all existent time jumps are detected and properly corrected and that no new time jumps are introduced by SW
- Strictly speaking frame times are not constant in [ms] but in clocks
- However, SAS assumes [ms] and absolute effect small
- Time jumps can be reduced from 30 % to 2 %

1.9 INS and WDs for calibration (Vadim Burwitz)

- what is new in that talk ?

1.10 The EPIC PSF (Andy Read)

- 2D PSFs agree now also better re flux determination with the public CCF PSFs
- elliptical parameterization of the 2D PSF (core radius, alpha, ellipticity)
- cal access routine needed
- model taken also various side effects into account (spiders, spokes, ...)
- for spectra: ELLBETA version that produce off axis PSF/ARF to be tested
- for source searching: more detailed work needed

1.11 Modelling pile-up effects in EPIC PSF (Jonathan Gimeno)

- Automated method to determine pile-up comparing pile-up free images with images of various pile-up levels.

2 Cross Calibration

2.1 Cross-Calibration with SAS 7.1 (Martin Stuhlinger)

- New RGS effective area improves cross calibration between EPIC and RGS, slight overcorrection at low energies for RGS regarding flux with a possible time dependency still to be solved
- New MOS QE results in consistent spectral results between pn and MOS, but leave an overall normalization difference of 5-7 % (MOSs are higher)
- Chandra ACIS LETG agrees with EPIC, ACIS MEG/HEG gives higher normalization at high energies (up to ~10 %)
- Suzaku preliminary analysis; XIS and EPIC agree in slopes for PKS2155, still problems re. consistent flux determination (more Suzaku data analysis experience needs to be build up)

2.2 Analysis of the soft response of pn and MOS with a sample of blazars (Silvano Molendi)

- New arfs result in smaller NH ~ 2x 10E20
- For the first time we have good agreement between MOS and PN
- Comparing NH values with radio data however does not improve

2.3 Updates on ACIS Calibration and Operation (Paul Pluchinsky)

- New CTI correction for graded mode to be implemented in new CIAO
- CTI correction for continuous clocking mode under development
- Focal plane temperature issues: frequency and magnitude of deviations from the desired temperature have increased → new operations concept having the detector housing heater off may allow to reduce these deviations

2.4 The Chandra ACIS contaminant (Herman Marshall)

- Unclear if increase of contaminant is asymptotic or infinite

2.5 XMM v Chandra - Cluster Analysis (Steve Snowden, GSFC)

- Systematic discrepancy between Chandra and XMM EPIC MOS fitted temperatures for higher temperatures
- The higher the fitted temperature the more likely the case that Chandra will find higher temperatures
- The difference is significant, as much as 2 keV
- XMM data show excellent consistency

2.6 XMM-Newton Chandra Cross calibration with Cluster of galaxies (talk from the Chandra cal workshop 2007 at Huntsville by L. David)

- Different temperatures from Chandra (higher) and XMM
- Confirmed also by Fe line ratios

- Problem may be in the HRMA modelling of the contamination over-layer, (2 corrections have been applied to the predictions of the ray-trace code since XRCF)
- Depth on HRMA over-layer based on grating spectra of AGN
- Using only correction from grating data brings iron line ratios and different band pass temperatures in better agreement and also better agreement with XMM
- New over-layer depth is only 10 A
- THIS IS WORK IN PROGRESS AND NOT YET RELEASED

3 AOB

3.1 Report from BGWG

- ESAS updated
- New release of Blank Sky data in May 2007
- Paper on XMM-Newton long term BG (R. Gonzales)

4 Long term calibration plan

see: http://xmm.esac.esa.int/~xmmdoc/EPIC/EPIC_calibration_campaign_2008.txt

- 2008-2010 (Goal: Cal accuracy ~ statistical uncertainty)
 - MOS patch recalibration (SS)
 - pn rate dependent CTI (MK)
 - pn time dependent CTI (MK, KD)
 - split events correction (KD) → 2009
 - 3x3 mode pattern calibration (JAC, RS)
 - 2d PSF (AR)
 - MOS timing mode non GATTI modelling (RS)
 - CTI/GAIN monitoring transfer to ESAC (MS, MSt)
- as of 2011
 - routine instrument monitoring (CTI, BAD PIX, offset)
--> routine CAL updates (CTI, BAD PIX, offset)
 - contingency calibration....(if possible at all?)

5 Actions items

AI_EPIC_CAL_19_01: Implement warning for very bright sources re non perfect FIFO reset correction (MJF)

AI_EPIC_CAL_19_02: Summarize current situation of flux calibration with off axis angle (perhaps work of Silvia Matteo) in a technical note for the XMM documentation (RS)

6 Open old action items

AI_EPIC_CAL_17_08: SS to calibrate Pattern 0 for 3x3 mode

AI_EPIC_CAL_14_1: Additional time column with other 0 point for OHL (RD, MK, MJF)

AI_EPIC_CAL_14_3: MK to implement time jump in a Qcheck type procedure in the long term

7 Closed old action items in period of last Cal_meeting to this CAL-meeting

AI_EPIC_CAL_18_01: Contact Andra Tiengo and arrange integration into EPIC cal and task responsibilities (SS/MK)

AI_EPIC_CAL_18_02: Review CALCLOSED/CLOSED observation strategy (MK)

AI_EPIC_CAL_18_03: Comment on ESAC proposal for Flare screening (AI_EPIC_CAL_17_05) (HB/UGB)

AI_EPIC_CAL_17_03: MK, MM to test FIFO reset correction

AI_EPIC_CAL_16_05: Provide estimate for the need of additional MOS CLOSED observations (SSn)

8 Splinter meetings

8.1 CALCLOSED/CLOSED strategy

- correlate CTI with high energy proton flux (MS)
- check feasibility of use of Vela SNR for CTI determination (AT)
- as of now check of line position with parasitic CALCLOSED and or slew CALCLOSED (MOS), in case of problems we request via NRCO CALCLOSED to determine CTI (taking calsource decay into account)
- CLOSED every month (pn: FF/eFF equally)
- CALCLOSED pn 3:1 FF: eFF
- NRCO on Tycho CALMEDIUM 30, 30 ks Medium
if successful: Idea propose CALthin/thick for standard user for FF and eFF

9 Next meeting

7-9 April 2008 Hotel Tora, Peguera, Mallorca