

Meeting date	24.-25.09.2003	ref./réf.	XMM-SOC-CAL_EPIC-MIN-0012	page/page	1 5
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date de la réunion

Meeting place	Saclay CEA	chairman	S. Sembay
<i>lieu de la réunion</i>		<i>président</i>	

Minute's date	07-10-2003	Participant Andy Read Eckhard Kendziorra Frank Haberl Jean Ballet Konrad Dennerl Michael Freyberg Nicola La Palombara (partly) Philippe Ferrando Silvano Molendi Steve Sembay Ulrich Briel Leo Metcalfe Marcus Kirsch Matthias Ehle Michael Smith Tony Abbey Darren Baskel Bruno Altieri Guillermo Buenadicha Stephane Rives Monique Arnaud J.L Sovageot
<i>dates de minute</i>		

Subject/objet	EPIC CAL Meeting 12	copy/copi
		<i>F.Jansen</i>

1 Epoch dependency of the MOS QE and RMF and cross-calibration with the pn S. Sembay)

- Further investigation of MOS Low energy problem indicates presence of a QE and redistribution change introducing a Carbon edge and changing the optical depth of the O edge can explain the phenomenon.
- Linear increase of the C edge.
- Systematic comparison of AGN with smooth continuum shows better agreement in the energy range from 0.6-1.5 keV for the slopes of the three instruments using the new QE. (-+ 0.1)
- For the energy range from 3-10 keV systematic differences for the MOS 1 of -0.1 in slope.
- Variation in oxygen edge: increase in optical depth. slight indication in 3C273 for an O-edge,, don't use that source for further o-edge calibrations
- Both MOS cameras show evolution in QE at "carbon" and oxygen
- Pn seems unaffected
- Carbon /oxygen ration and differences in epoch dependency not consistent with a single compound
- Both MOS cameras show evolution in energy redistribution
- ASAP NRCO on RXJ 0720 for further checks

2 Routine Cross Calibration at Vilspa (M. Kirsch)

- Systematic analysis has been started at VILSPA by the Calibration scientists
- ~25 targets will be used to establish a report on the current status of cross calibration for the X-ray instruments.
- Work will be carried out interacting with the PI teams.

3 Analysis of the X-ray psf (A. Read)

- spectra from annuli at 0, 5, 10, 15,...40 pixels of MCG-6-30-15
- created appropriate RSPs and ARFs
- fit (power-law modelling) on the 2-10 keV single events.
- derived spectral slope for non-piled-up point sources is not independent of the extraction radius

4 Analysis of the optical psf (B. Altieri)

- MOS optical loading assessment in PHS-tools: OK for on-axis sources
fraction of optical light in central pixel = ~1% (vs 2% in Lumb's model) but threshold raised to 50 ADUs/frame/pixel since AO1. Too conservative for off-axis sources - unchanged
- EPIC-pn optical loading assessment in PHS-tools was much too conservative by a factor 6.
Threshold raised for AO3 from 50 to 100 counts/frame/pixel
- New diagnostics in THIN-filter this summer on OM cal. stars seems to show that optical loading is overestimated but contradictory results so far ...

5 Vignetting (M. Kirsch)

- Optical axis values derived from Coma have been implemented in MISCDATA CCFs
- New BS misalignment angles have been calculated
- Astrometry was checked with OMC2/3
- Vignetting correction for 3C58 for MOS1 /2 checked. Better than 1-2 %
- Further checks for pn underway (G21.5 and Coma)

6 MOS Timing Mode (M. Kirsch)

- 1E0102-7219 in rev. 447 in LW and Timing mode for both cameras
- energy in Timing mode is overcorrected by up to 1.5 %
- differences between both MOSs in LW mode less than ~0.7 %
- differences between both MOSs in Timing mode less than ~0.5 %
- proposal: fix differences between LW and Timing mode with an energy dependent tuning function (as also successfully done for the pn)

7 Flickering Pixels in MOS2 (J. Ballet)

- Up to 8% flickering pixels for the different CCDs for MOS2
- Not present for MOS1

8 Spatial and Temporal variation of the EPIC pn energy scale (K. Dennerl)

- Recipe for energy correction for pixels effected by corrupted values of the offset map, using offset table or 20ADU image
- superposition of Vela SNR observations confirms the presence of energy shifts in a ring-like structure with a similar shape as the ventilation hole in the electronic board below the CCDs:
- explanation: systematic deviations from exponential charge loss caused by optical/infrared light shining through the ventilation hole, which reduces the charge loss in this area due to partial saturation of traps
- evidence for degradation of CTI., weaker time dependence (quadratic might be needed)
- sporadic shifts of up to 20 eV over the mission for the CALCLOSED data, could be related to high cosmic BG
- evidence for change in energy resolution: Mn 1 eV per year
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9 BG and SAS 6.0 pn (M. Freyberg)

- Still: in 2-7 keV range : 10^{-1} cts s $^{-1}$ keV $^{-1}$ serendipitous calibration lines
- Spatial inhomogeneties of fluorescence lines
- Event pattern fractions dependence on mode, position and energy
- Decay of calibration source: longer exposures needed
- Discarded line counter vs. Background rate
- Archive reprocessing: DLI map analysis
- New time jumps created by improved OAL?!

10 Round table discussion on calibration observations and analysis strategy

- Proposal for low energy response monitoring MK
- Adjust MOS1 QE for higher energies to the pn SS
- RGS cross calibration
- CAS-A observation for EEF pn and MOS Timing
- Calibration of OFF axis: Silvano is interested: open issues: QE and redistribution:
 - Raster scans with N132D or 1E0102 needed to invest the OFF axis behaviour
 - Internal calibration source checks will be done by SM and DB
- BG workshop at Milano will have as output a thread to be made public at VILSPA BA,SM, ME
- WHAT will be in the new SAS 6.0
- Refinement of MOS Gain SS
- Chains versus procs

11 actions

AI_EPIC_12_1: MK to provide a proposal for MOS LOW energy problem follow up measurements.

AI_EPIC_12_2: MK to organise Cas-A observations for EFF calibration of pn

AI_EPIC_12_3: BA to provide status of RGS versus EPIC BS with proposal to go for one BS.

AI_EPIC_12_4: JB to provide VILPA with a tool to check MOS data for "3 missing raws" feature

AI_EPIC_12_5: TA to provide VILSPA with new sequences with old BS

AI_EPIC_12_6: MS/ME to make Offset maps available at VILSPA for the users & X-ray loading information.

AI_EPIC_12_7: MK to follow up time jump problem.

AI_EPIC_12_8: MK/LM to sort out possible resources for implementing Molendi/Sembay pile-up correction into SAS.

AI_EPIC_12_9: SS to provide VILSPA with time dependent new QE files.

AI_EPIC_12_10: SS to refine the ADUCONF files to cope with the slight over correction.

AI_EPIC_12_11: BA/MS to review limits for optical loading in UHB

12 Open old action items

AI_EPIC_CAL_11_6: RS to follow up the possible coordinate problem

AI_EPIC_CAL_11_7: MK to implement values from filter CCF_6 in a new CCF

AI_EPIC_CAL_11_8: EK/UB/MK to organise an observation with fixed offset upload in perigee

AI_EPIC_CAL_11_5: Frank to verify pn QE with the Crab

EPIC_CAL_WORKSHOP

AI_EPIC_CAL_021028_1: SS to check the implemented O edges

AI_EPIC_CAL_021028_2: SS to check the filter transmission concerning carbon edge

AI_EPIC_CAL_021028_3: SS to check if the excess between 1.8-2.2 keV could be cured with a different treatment of the Silicon edge, fluorescence, or gold edge.

AI_EPIC_CAL_021028_4: SS to check QE (thickness of MOSs) for high energies

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

AI_EPIC_CAL_030204_1: MK to ask for a long Vela operation (100 ksec) in order to measure possible CTE effects related to optical loading in pn ventilation hole **done**

AI_EPIC_CAL_030204_2: MK/MS to follow up optical PSF/Xray PSF for PHS **done**

AI_EPIC_CAL_030204_3: RS Request on model output for epatplot **done**

AI_EPIC_CAL_030204_4: SS to provide MK with statement on low energy MOS flux problem **done**

AI_EPIC_CAL_030204_5: SM to provide MK with statement on PS problem **done**