The EPIC-PN response matrix - update

Known problems in PN6.6 / SAS6.0

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EPIC Cal meeting, VILSPA, 23.-24. March 2004
1) Redistribution at 400 eV
2) Flat shelf
3) Si and Au edges

Residuals in spectra used for gain fits at Au edge:

PKS 2155
Mkn 421
3C273
MCG-6-30-15
3) Gain at Au edge
3) Si and Au edges - improvements

MCG-6-30-15
240 ksec merged from 3 revolutions
1.4 Million Counts
1.1-4 keV binned to at least 500 cts
dips at 1.80, 2.00 keV
bump at 2.40 keV

\[ \chi^2/\text{dof} = \frac{1045}{578} = 1.81 \]
3) Quantum efficiency around Si-K edge

EPIC-pn

EPIC-MOS singles
3) EPIC-pn doubles
3) EPIC-pn singles
3) Trough in QE around 1800 eV?

Approximation by Gaussian absorption line
3) Gauss approximation

![Plot of satellite revolution vs. line energy with labeled data points: PKS 2155–304, 3C273, Mkn 421, MCG-6-30-15.](/data22j/fwn/xmm/cal_pv_data/sw_Auedge_SiLine_sas600+_qdp)
3) Au edge in mirror effective area

Adjustment to mirror effective areas from MOS Crab spectra 15 eV shift + increases

Proposed fine adjustment from pn spectrum of MCG-6-30-15
3) Test with adjusted mirror areas

\[ \chi^2/\text{dof} \text{ improvement from } 1045/578 = 1.81 \]
\[ \text{to} \quad 632/577 = 1.10 \]