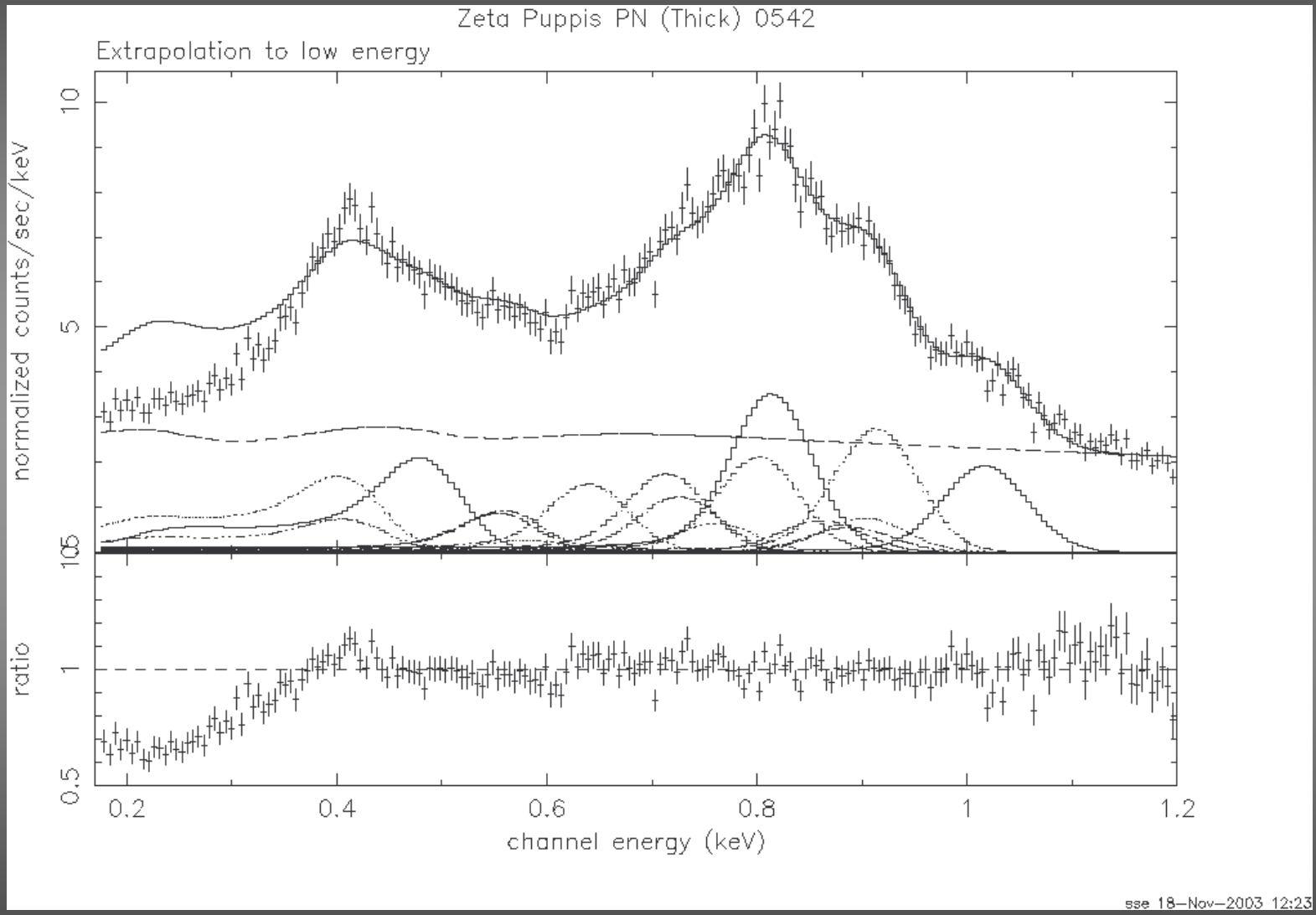
The EPIC-PN response matrix - update

Known problems in PN6.6 / SAS6.0

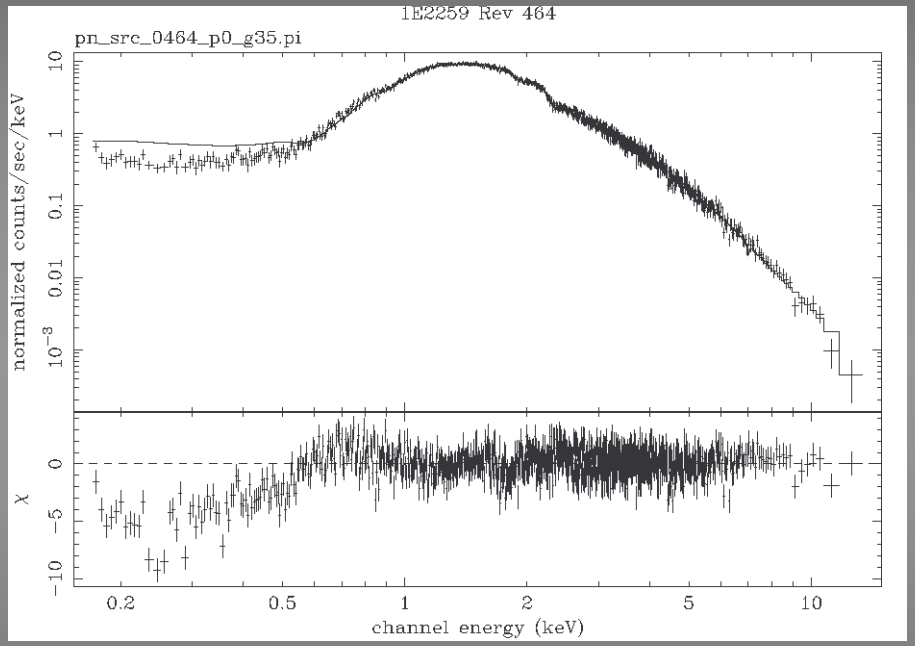
Frank Haberl

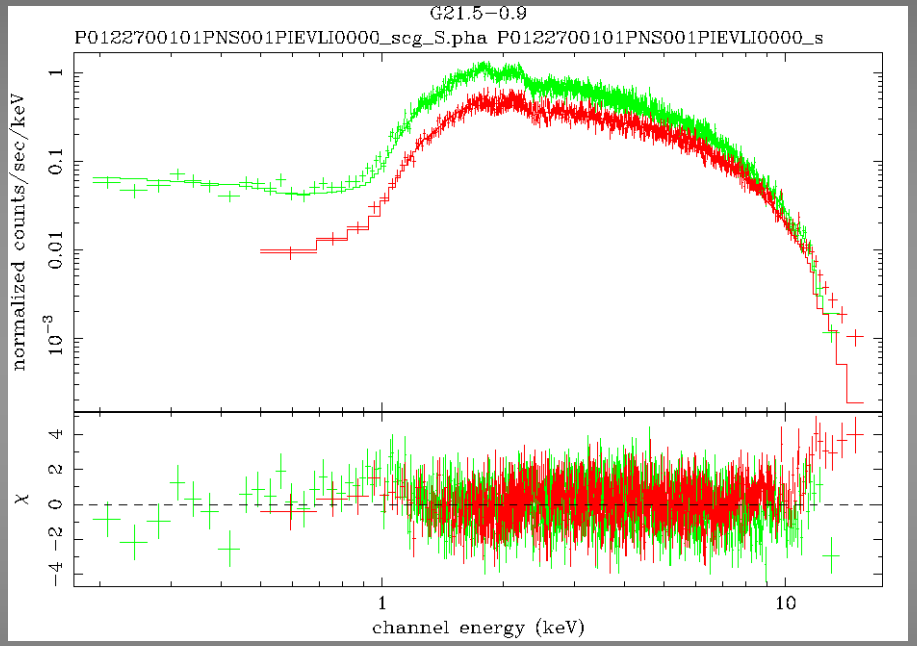
EPIC Cal meeting, VILSPA, 23.-24. March 2004

1) Redistribution at 400 eV

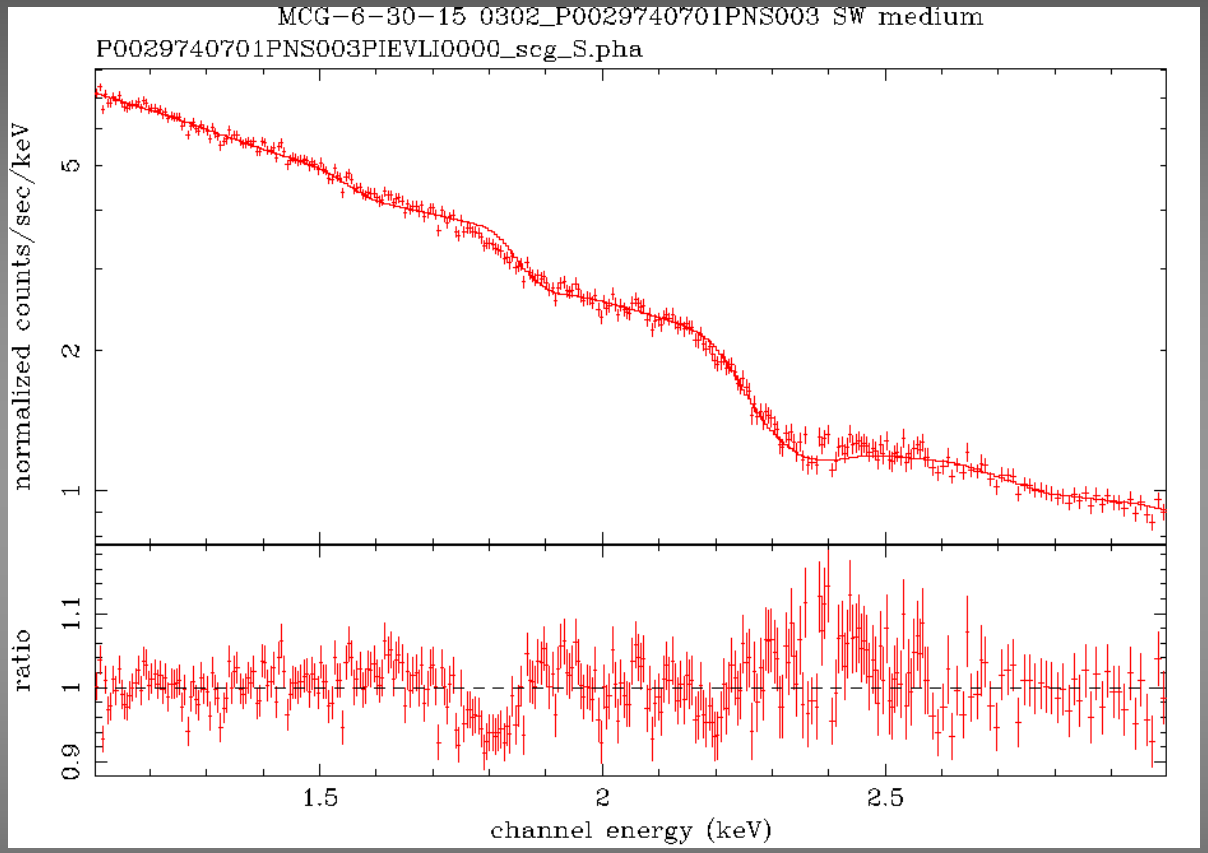


2) Flat shelf


1E2259 Rev 464
pn_src_0464_p0_g35.pi
normalized counts/sec/keV
10^{-3}
0.01
0.1
1
10
χ
−10
−5
0
0.2
0.5
1
2
5
10
channel energy (keV)


G21.5−0.9
P0122700101PNS001PIEVLI0000_scg_S.pha P0122700101PNS001PIEVLI0000_s
normalized counts/sec/keV
10^{-3}
0.01
0.1
1
χ
−4
−2
0
2
4
1
10
channel energy (keV)

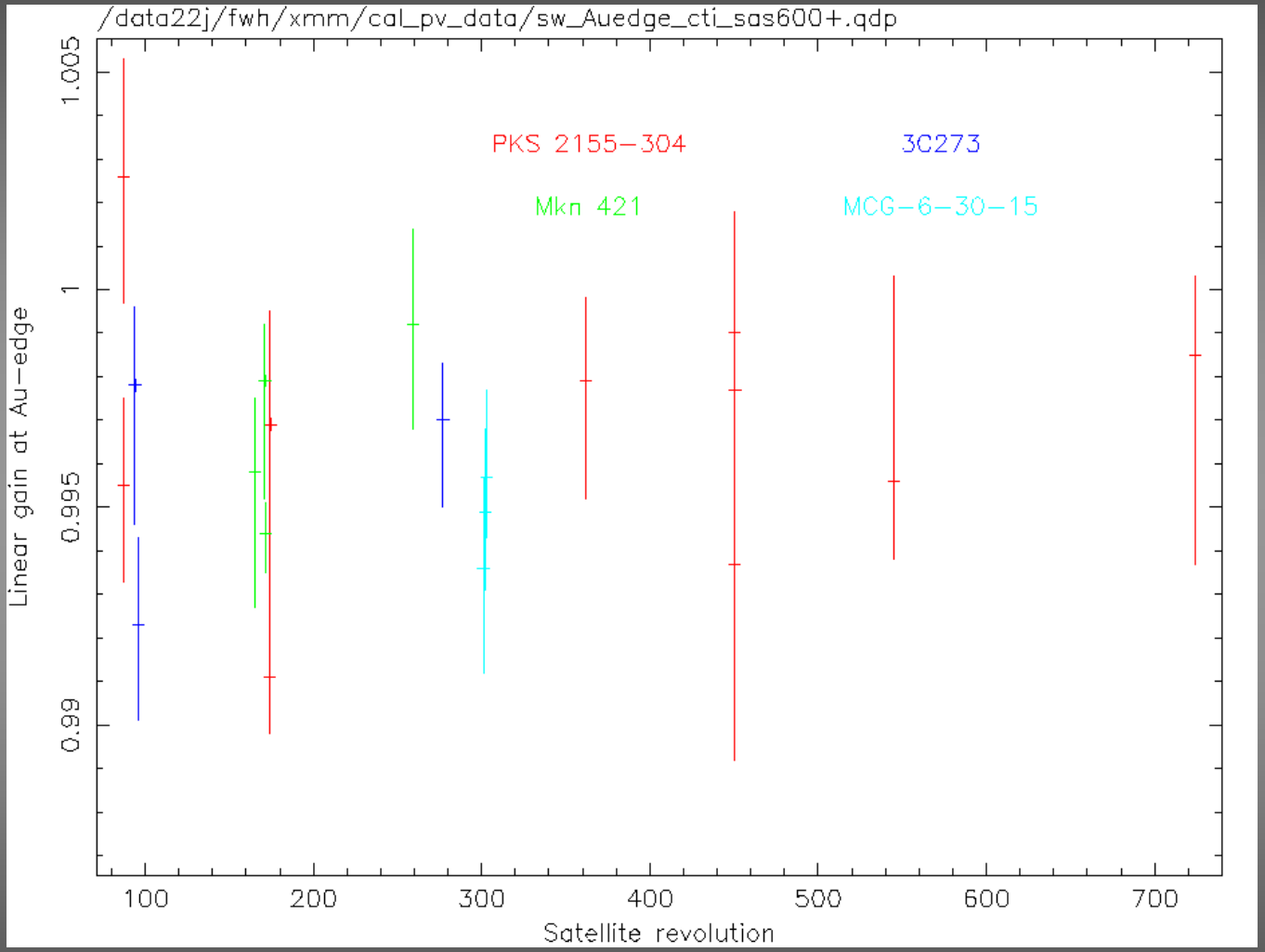
3) Si and Au edges



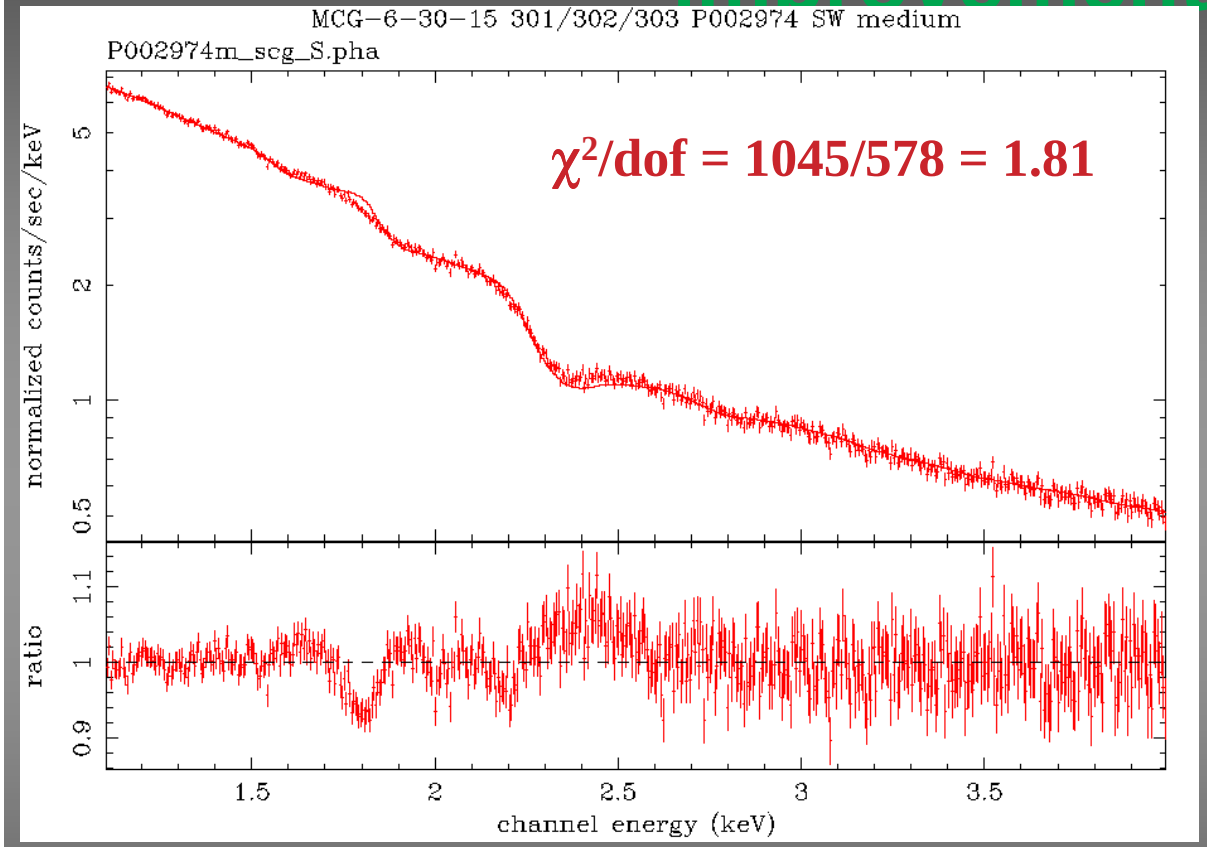
Residuals in spectra used for gain fits at Au edge:

PKS 2155
Mkn 421
3C273
MCG-6-30-15

3) Gain at Au edge



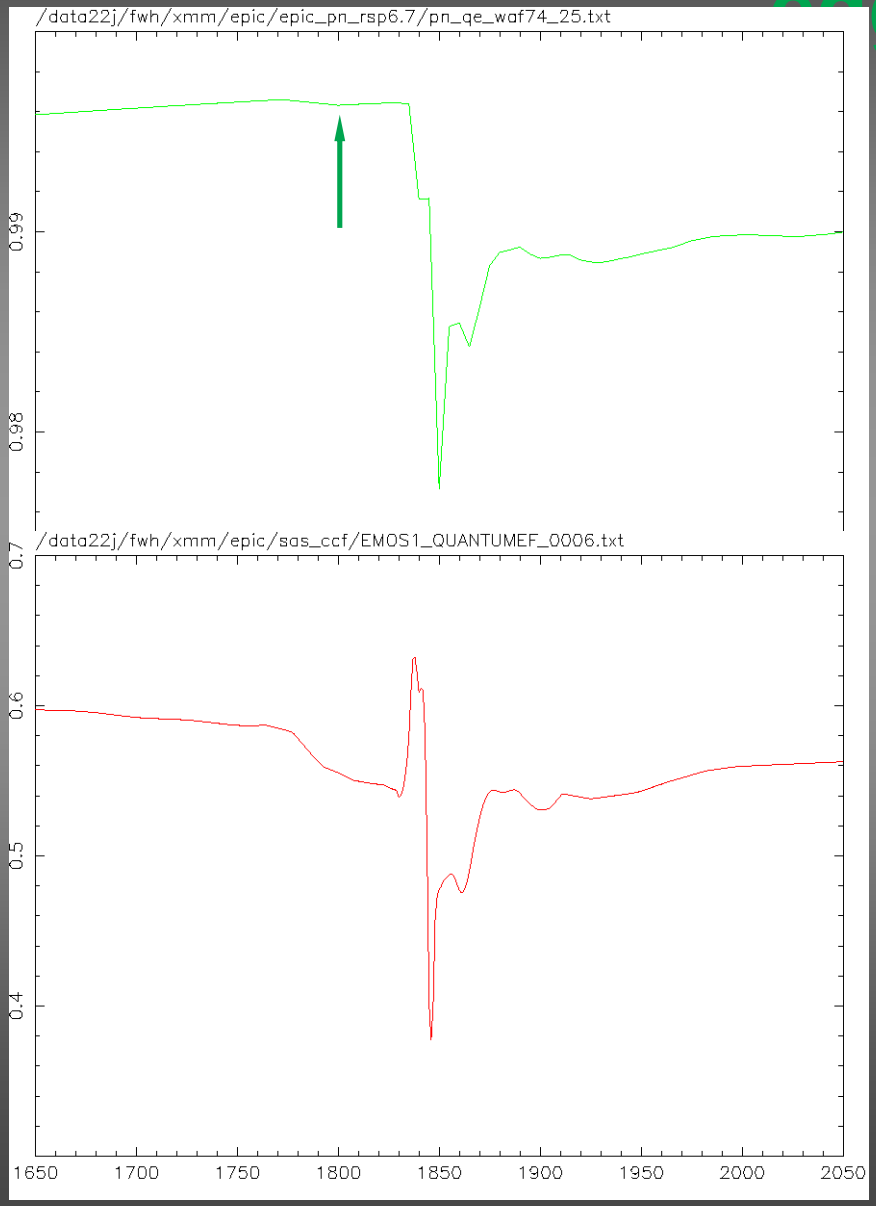
3) Si and Au edges - improvements



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

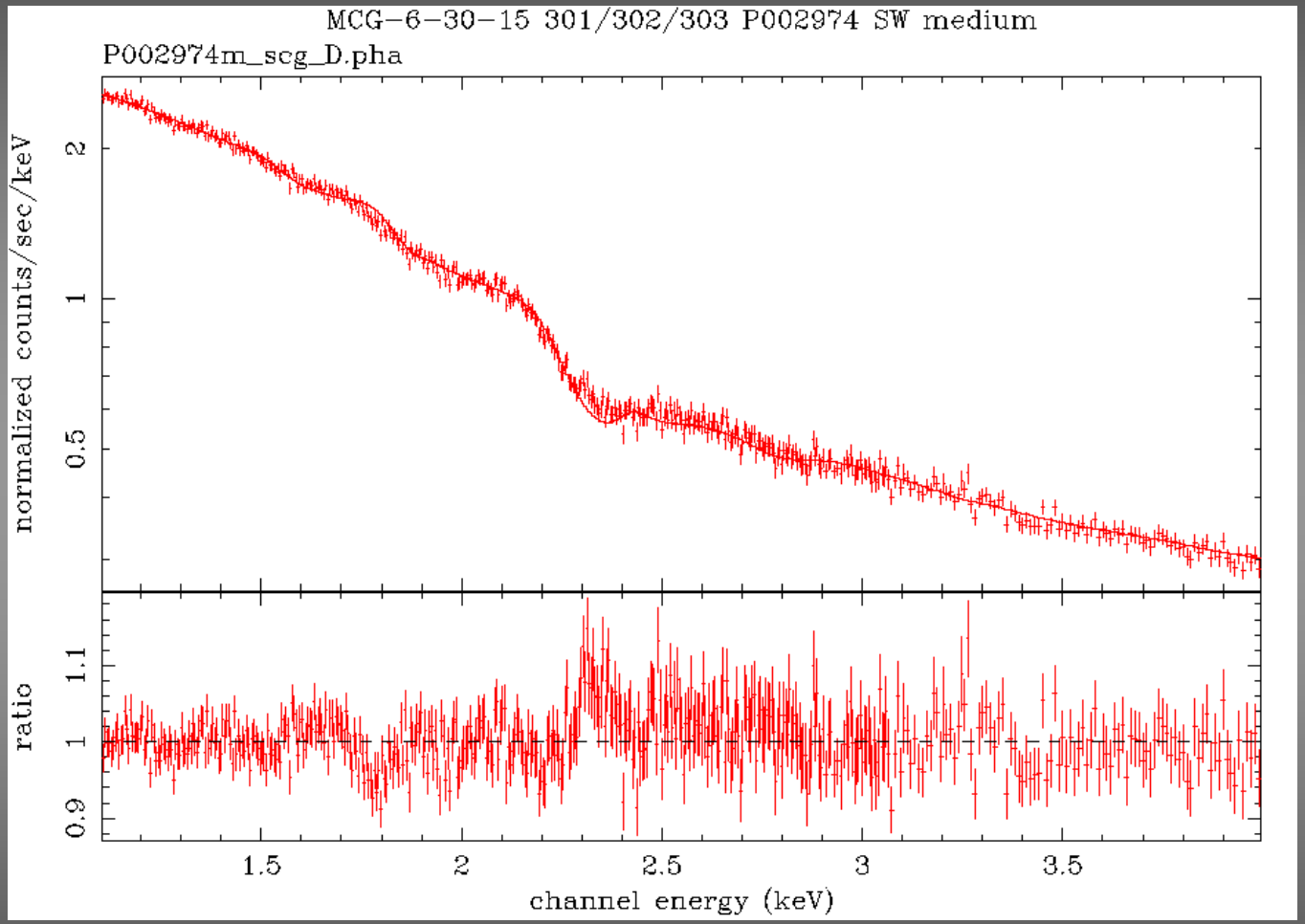
3) Quantum efficiency around Si-K edge



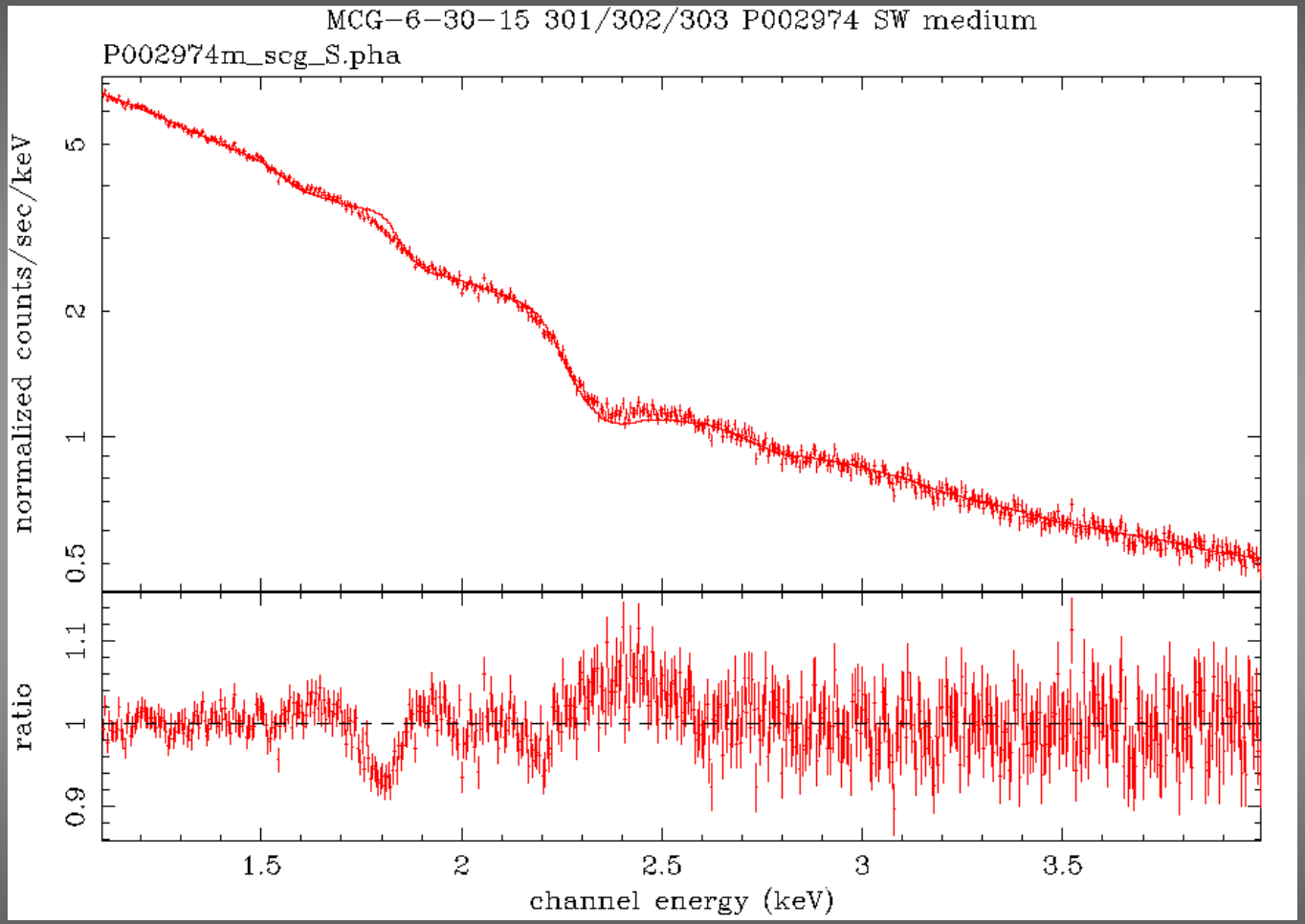
EPIC-pn

EPIC-MOS singles

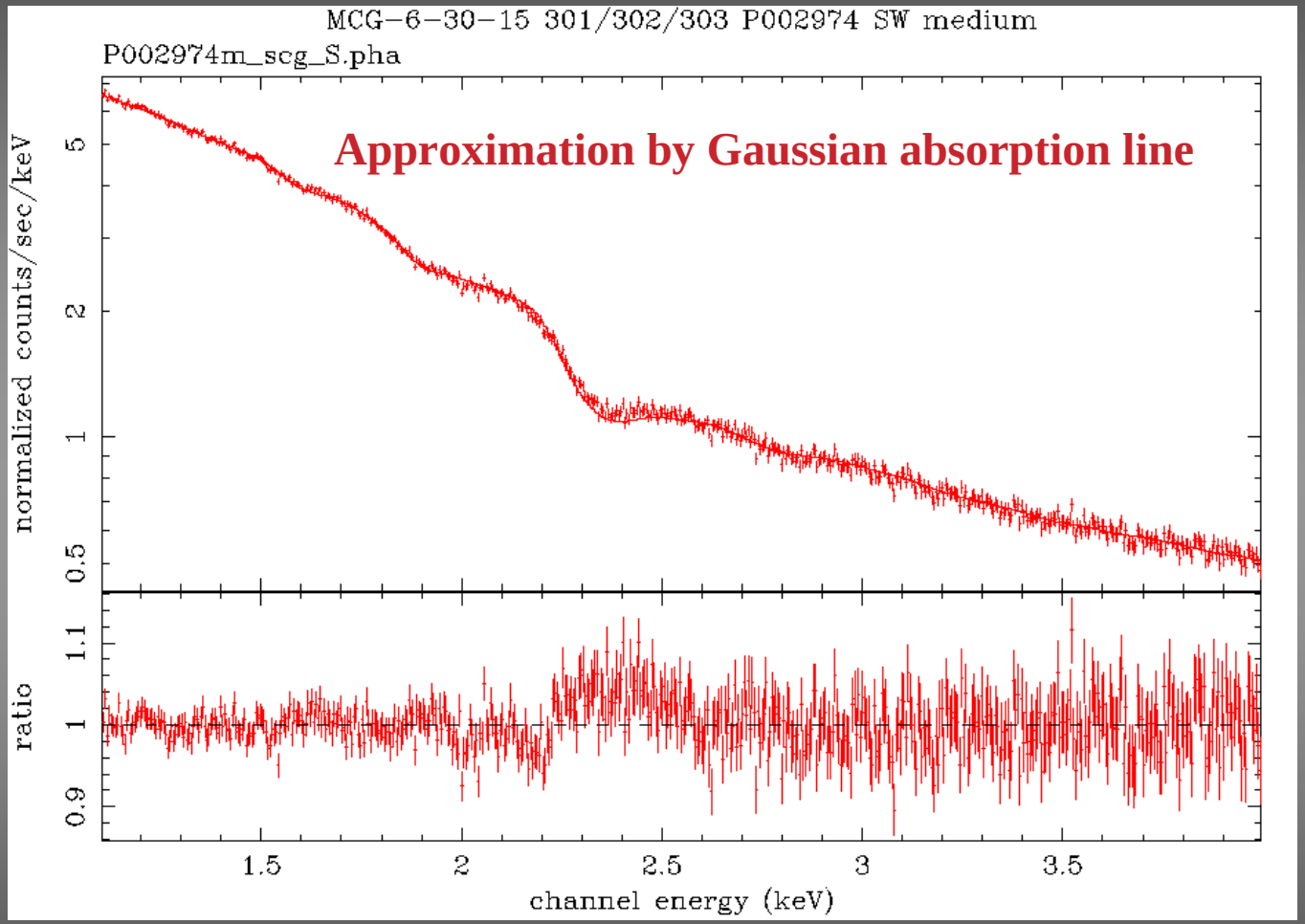
3) EPIC-pn doubles



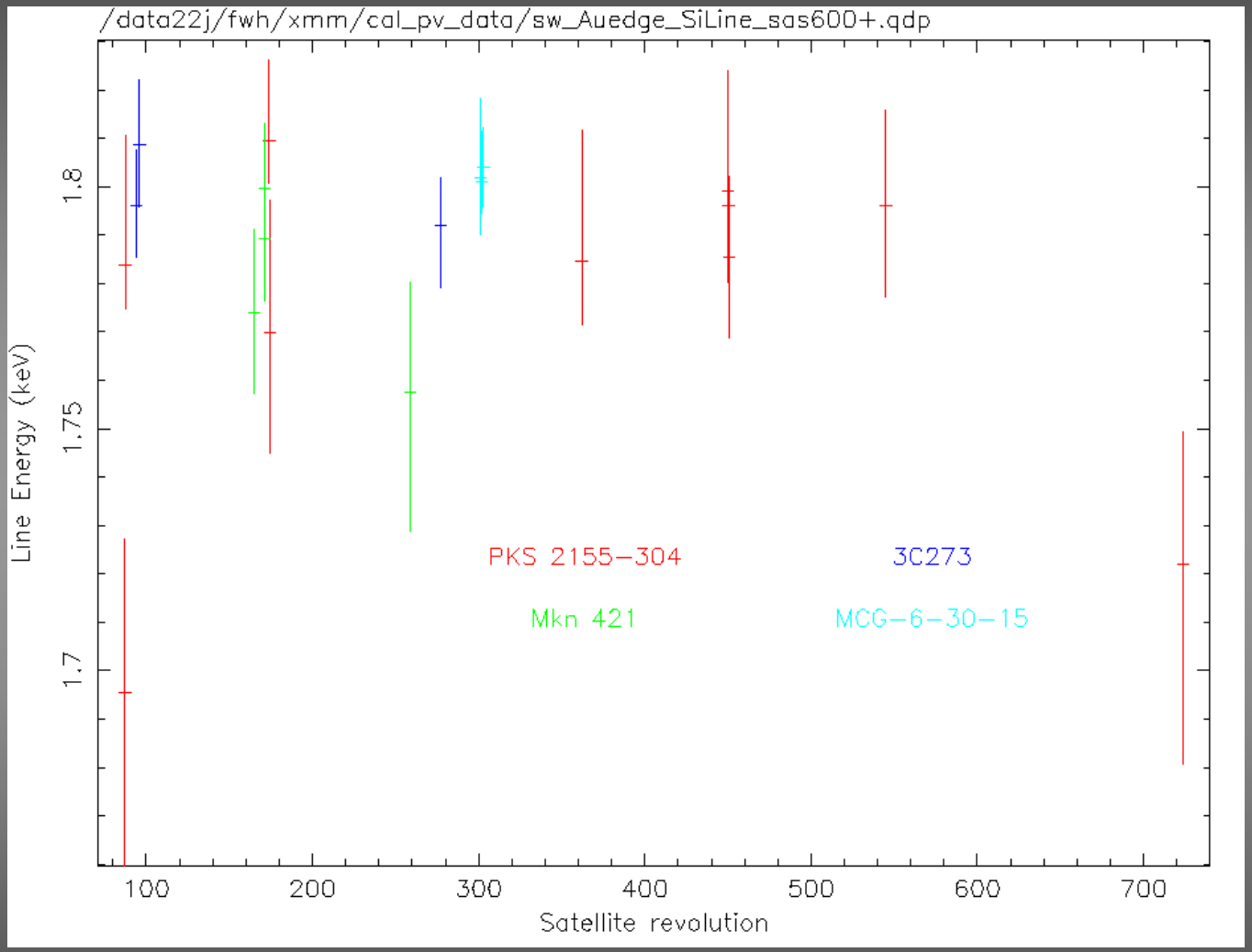
3) EPIC-pn singles



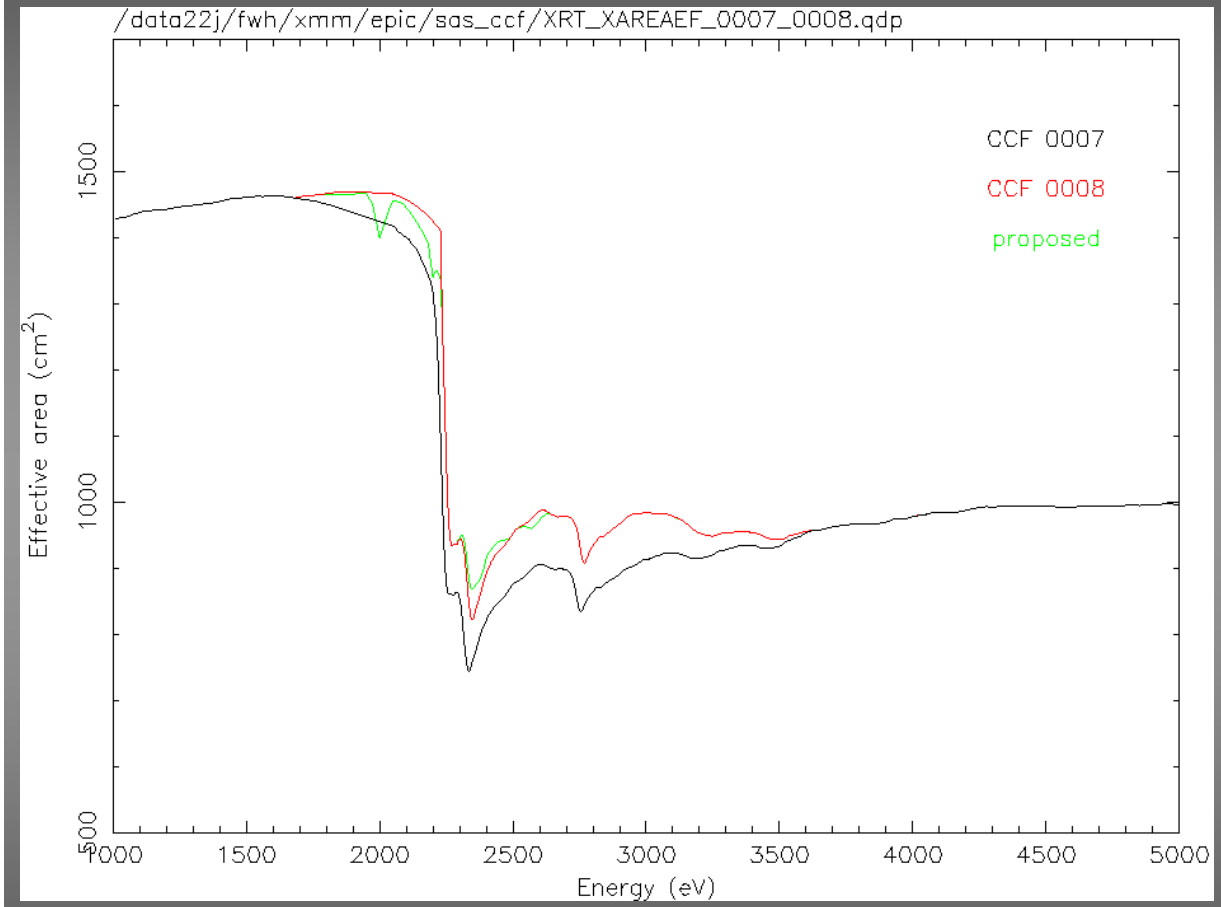
3) Trough in QE around 1800 eV ?



3) Gauss approximation



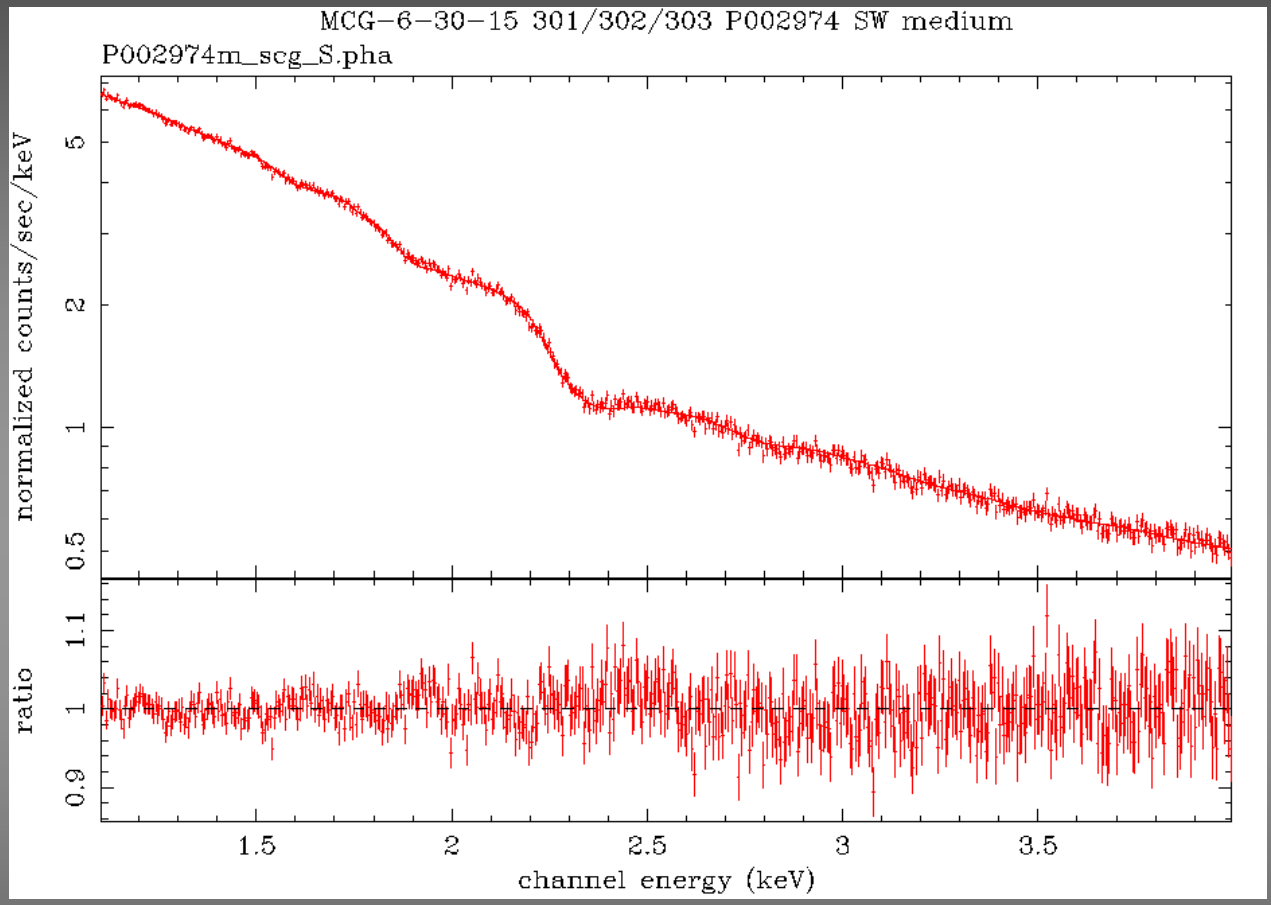
3) Au edge in mirror effective area



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



χ^2/dof improvement from 1045/578=1.81
to 632/577=1.10