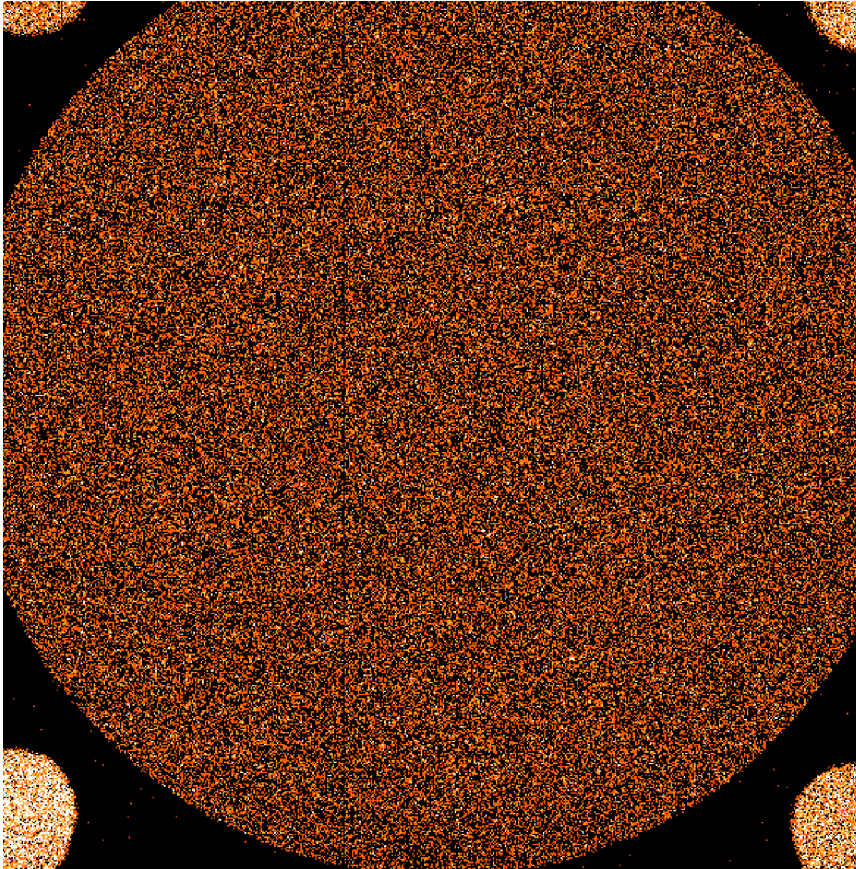


# SXT OVERVIEW

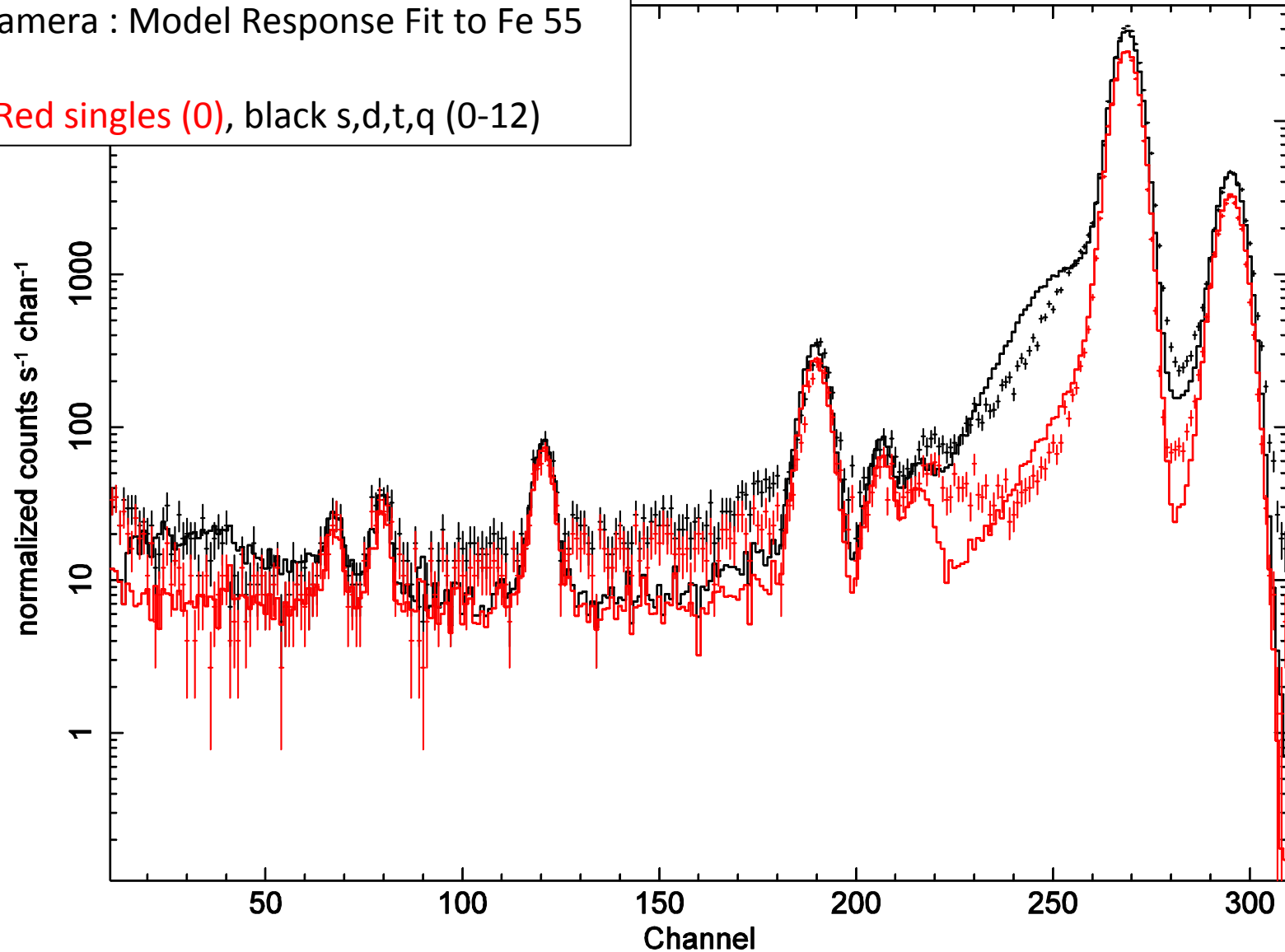


- E2V CCD 22 Frame-store Device
- Same batch as SWIFT Flight CCD
- 600x600 pixels
- Focal Length=2m → ~4x4"
- FOV 40 arcmin (diameter)
- Radiator + TEC → -80C operating T
- 5 Fe55 Cal sources (4 corner, 1 door)

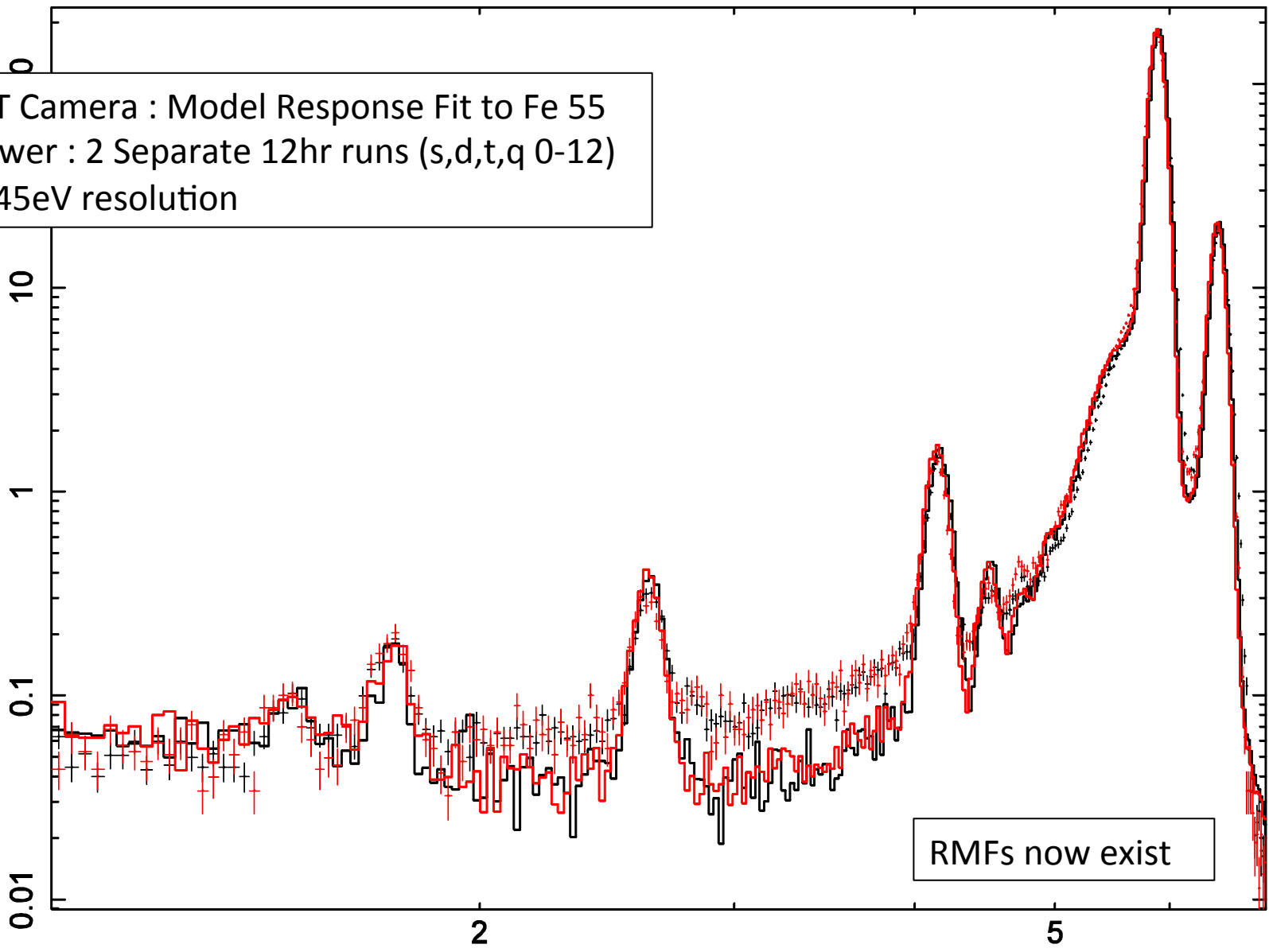
### data and folded model

SXT Camera : Model Response Fit to Fe 55

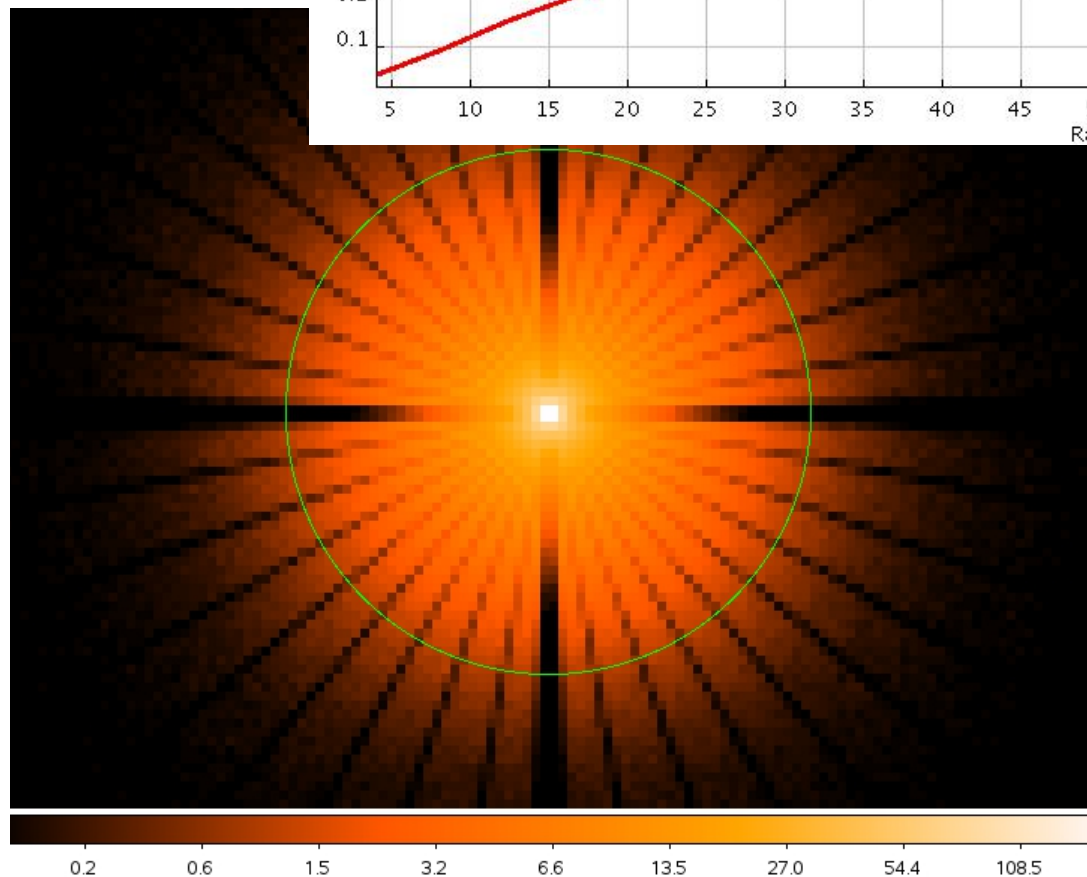
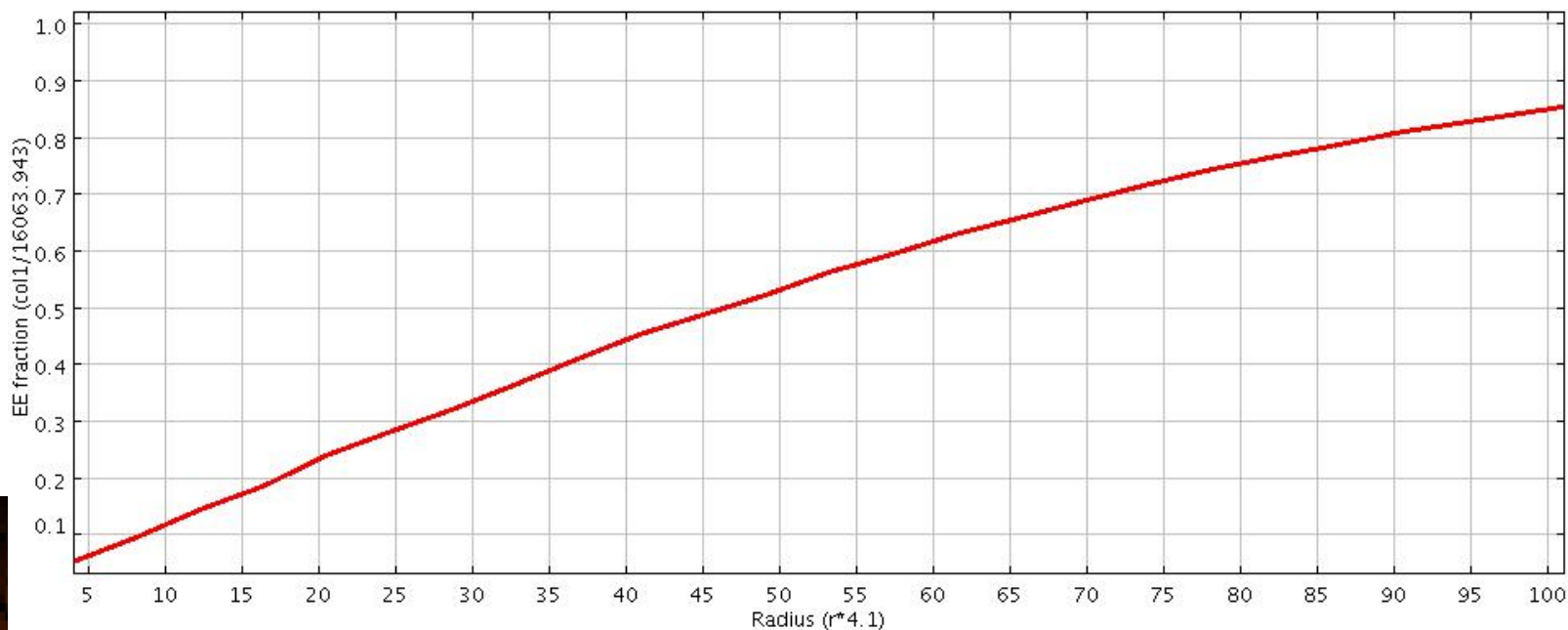
Old : Red singles (0), black s,d,t,q (0-12)



SXT Camera : Model Response Fit to Fe 55  
Newer : 2 Separate 12hr runs (s,d,t,q 0-12)  
~145eV resolution



RMFs now exist

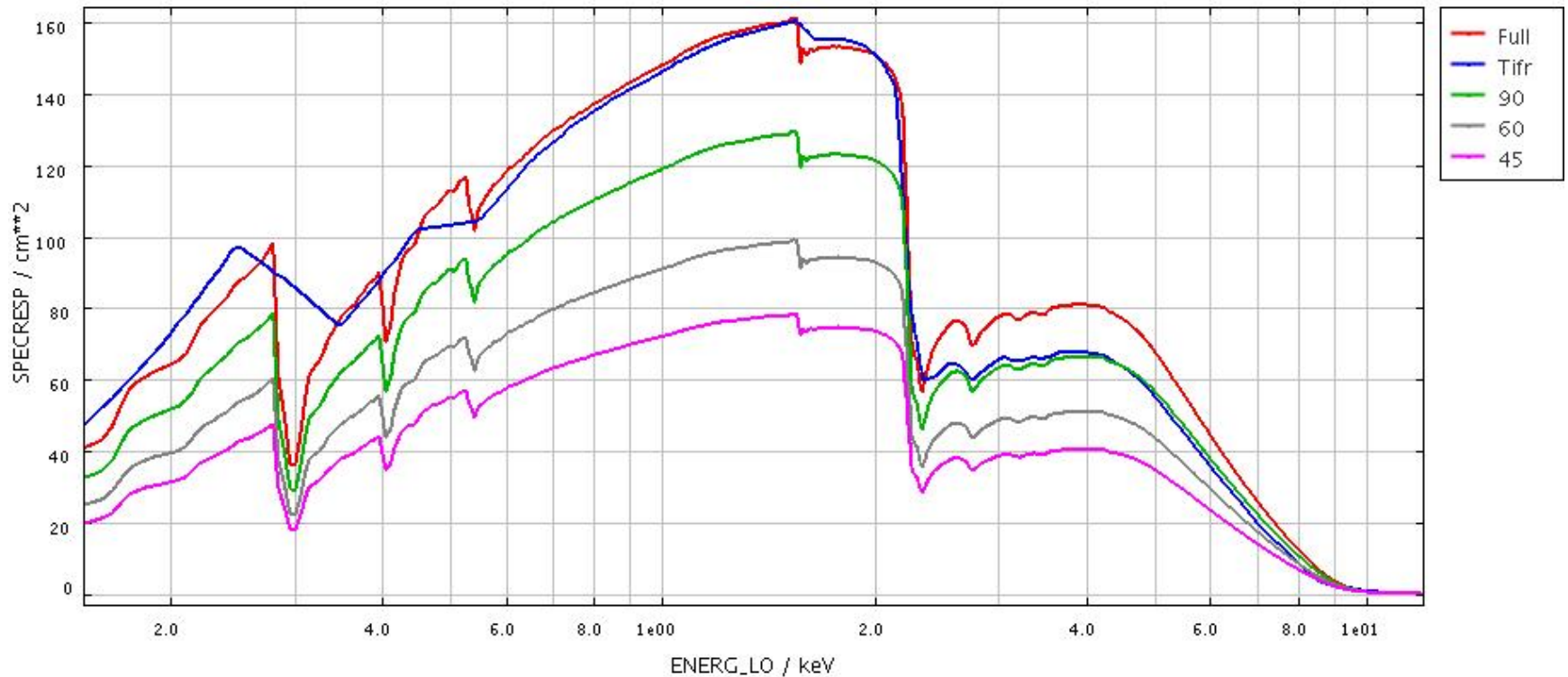


# SXT – PSF, Enclosed Energy

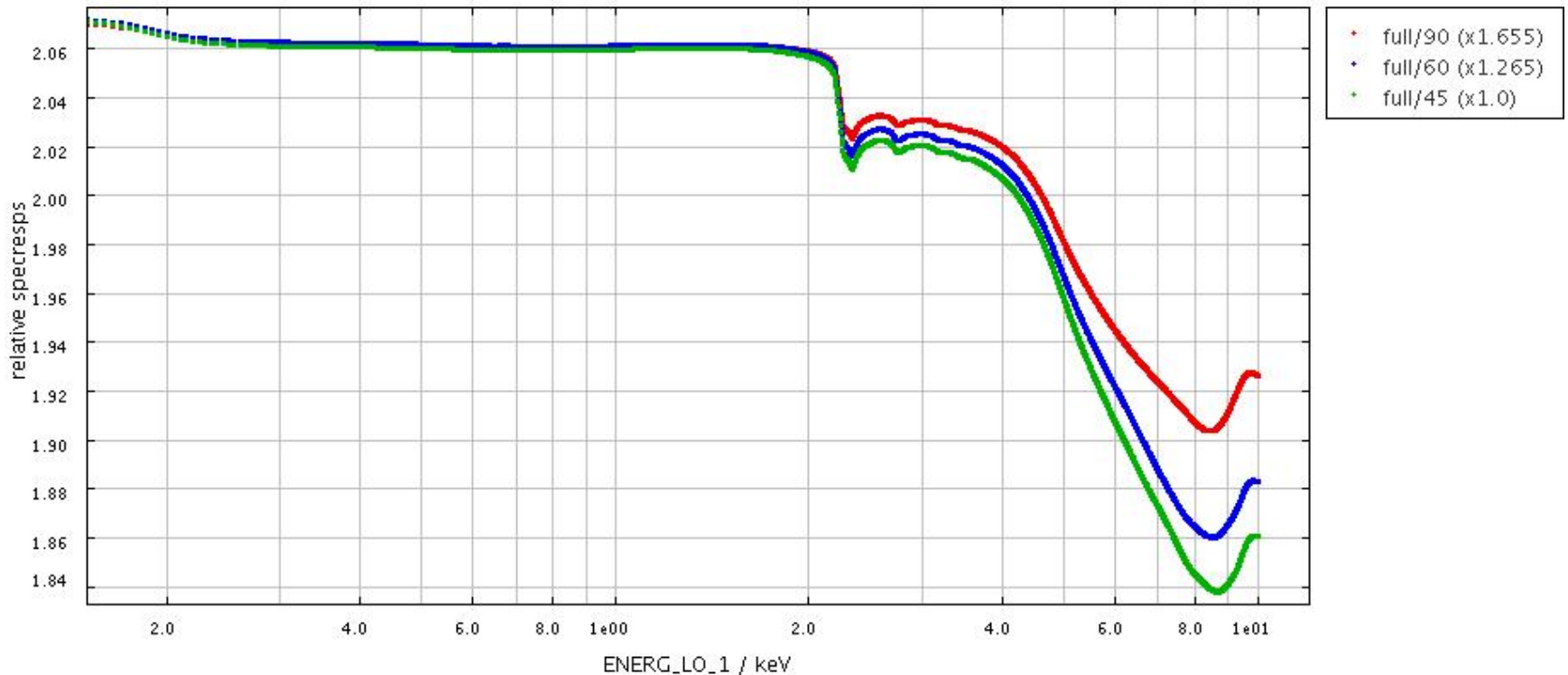
Enclosed Energy at:

- 45" : 49%
- 60" : 61%
- 90" : 80%
- 120" : 90% (c)

# SXT - ARFs – 45", 60", 90", full



# SXT – ARFs comparison



- Harder PSF is narrower

# Astrosat SXT+ Simulations Using IACHEC Sources

- IACHEC Standard Models
- C-stat, ungrouped
- 90" arf, BG, s,d,t,q 0-12
- Including (later) also LAXPC, CZT
- Sources in SXT calibration plan
  - use exposure times from plan



**APPENDIX B**

A list of SXT targets to be observed for performance verification and telescope calibration is compiled here. The total number of targets listed in ascending order of RA and the purpose of observation mentioned in the last column. Appropriate targets will be chosen from this list depending on visibility of the targets at the time of observation after launch.

**Source**

RA J2000	DEC J2000	Source Name	Counts per sec	Mode	Optical Mag V	Purpose
00 25 08.7	64 09 56	Tycho		PC		Effective area, Spectral resolution
01 04 02.4	-72 02 00	2E 0102-7217	4	PC	-	Effective Area, Gain, Vignetting
01 39 01.54	-17 57 01.8	UV Cet (Star)		PC	12.5	Energy Resolution, Low energy Soft X-ray spectrum
01 46 22.1	+61 45 07	4U 0142+61	3.6	PC	0.8	Bore-sight Very soft X-ray spectrum
02 14 33.6	-00 46 00	Mkn-590	-	PC	13.8	Hard X-ray spectrum
03 08 10.1	+40 57 21	Algol (star)		PC	2.12	Soft X-ray Spectrum
03 11 55.2	-76 51 51	PKS 0312-770	0.1	PC	16.1	PSF Core (hard spectrum)
03 19 48.1	+41 30 42.1	Perseus Cluster		PC		High Energy CTI
05 16 41.4	+45 59 52	Capella	207	PC-W	1.0	Spectral Resolution
05 25 02	-69 38 59	N132D		PC		Effective area, Gain
05 27 04.8	-11 54 03	HD 35850	1	PC	6.3	Spectral resolution
05 28 44.8	-65 26 55	AB Dor	4	PC-W	6.9	Spectral Resolution
05 34 32.0	+22 00 52	Crab	928	PC-W	8.4	Effective Area, Gain, Vignetting Timing, Cross Calibration
05 37 47.5	-69 10 19.9	PSR J0537-69		PC		Cross calibration
05 38 43.5	-44 05 09	PKS 0537-441	0.6	PC	16.5	Bore-sight
05 40 07.7	-69 20 05.1	PSR B0540-69		PC		Cross calibration
07 20 25.0	-31 25 50	RX J0720.4-3125	0.2	PC	no	PSF Core (Soft Spectrum)
07 47 31.3	-19 17 40.0	PKS 0745-19		PC		Low Energy Spectral Response
07 48 33.8	-67 45 08	EXO 0748-676	0.2	PC-W	16.9	Mode change
11 04 27	+38 12 32	Mkn 421		PC	12.99	Medium energy Response
12 29 06.7	02 03 08	3C 273		FW		Bore-sight, Effective Area, Multi Wavelength Observation
13 16 22	+29 05 57	HZ 43 (WD 1314+293)	6	PC-W		Accurate bore-sight
14 28 32.5	+42 40 29	H1426+428		PC		Effective Area

**Source**

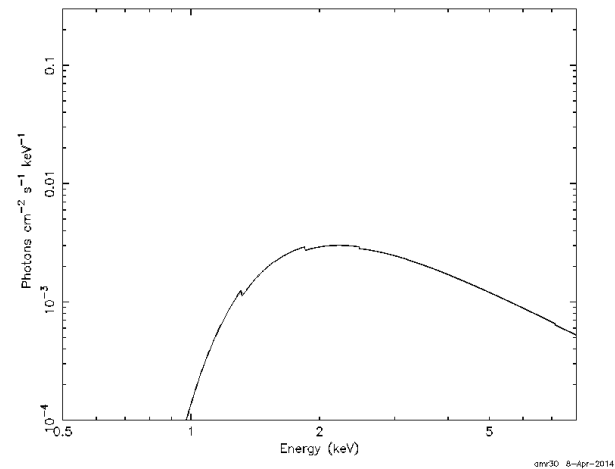
RA J2000	DEC J2000	Source Name	Counts per sec	Mode	Optical Mag V	Purpose
15 13 55.6	-59 08 9.0	PSR B1509 -58		FW		Timing/Cross calibration
15 20 40.8	-57 10 00	Cir X-1	480	PC	21.4	Bore-sight (with a window)
16 13 57.2	+65 43 11	Mkn 876	1	PC		PSF and off-axis PSF
16 32 16.8	-67 27 43	4U 1626-67		PC, FW		Timing
16 54 00	-39 50 45	GRO J1655-40		FW		High Energy Spectral response
17 00 58.5	-46 11 09	XTE J1701-462		FW		High Energy Spectral response
17 08 49.1	-40 09 10	RXS J1708-4009	7	PC FW	no	PSF Wings (Soft Source) Timing Calibration
17 32 01.1	-24 44 44	GX 1+4	5.0	PC	19.0	PSF Wings (hard source)
17 58 40	-33 48 27	2S 1755-338		PC	18.5	Ultra Soft X-ray Spectrum
18 33 33.5	-10 34 6.70	G21.5-0.9 (SNR)		PC		High Energy Self
18 16 02.4	-14 02 11	GX 17+2		PC		PSF Wings (hard source)
18 29 28.3	-23 47 49	GS 1826-238	1	PC, FW		X-ray burst, Mode change
18 36 56.3	+38 47 01	Vega		PC	-	Optical leakage check
18 39 57.4	+05 02 09	1837+049 (Ser X-1)		PC	14.2	Burst X-ray source
18 56 35.1	-37 54 31	RX J1856.4-3754	0.6	PC	25.6	Bore-sight Low energy response (QE)
19 15 11.5	+10 56 44.8	GRS 1915+105		FW, PC		Burst Source, Mode change
19 58 21.6	+35 12 06	Cygnus X-1		PC FW		Bore-sight (with a window) Effective Area
19 59 24	+11 42 37	4U 1957+115		PC	18.7	Ultra Soft Spectral Response
21 31 26.2	+47 17 24	4U 2129+470		PC	16.4	Burst source, Mode change
21 44 41.2	+38 19 18	Cygnus X-2	-	PC	14.7	Spectrum/Multi-wavelength
21 58 52.0	-30 13 32	PKS 2155-304	1	PC, FW		Bore-sight, Effective Area, UV
22 08 40.8	+45 44 32.1	AR Lac		PC	6.8	Soft X-ray spectrum
22 35 54.5	-26 02 00	NGC 7314 (Seyfert 2)	-	PC	10.9	Hard X-ray spectrum
23 01 08.3	+58 52 44.4	1E 2259+586		PC	No	Timing (6.98 s pulsar) and X-ray spectrum
23 23 24.0	+58 48 54	Cas A	21	PC, FW		Spectral Resolution
		Any AO star V-8		PC	8.0	UV Leak
		Any G0-G2 giant		PC	4.6	Red Leak
		Bright Earth		PC		Spatial response monitoring
		Dark Earth		PC		Instrument background



# G21.5 – Non-Thermal SNR, 20ks

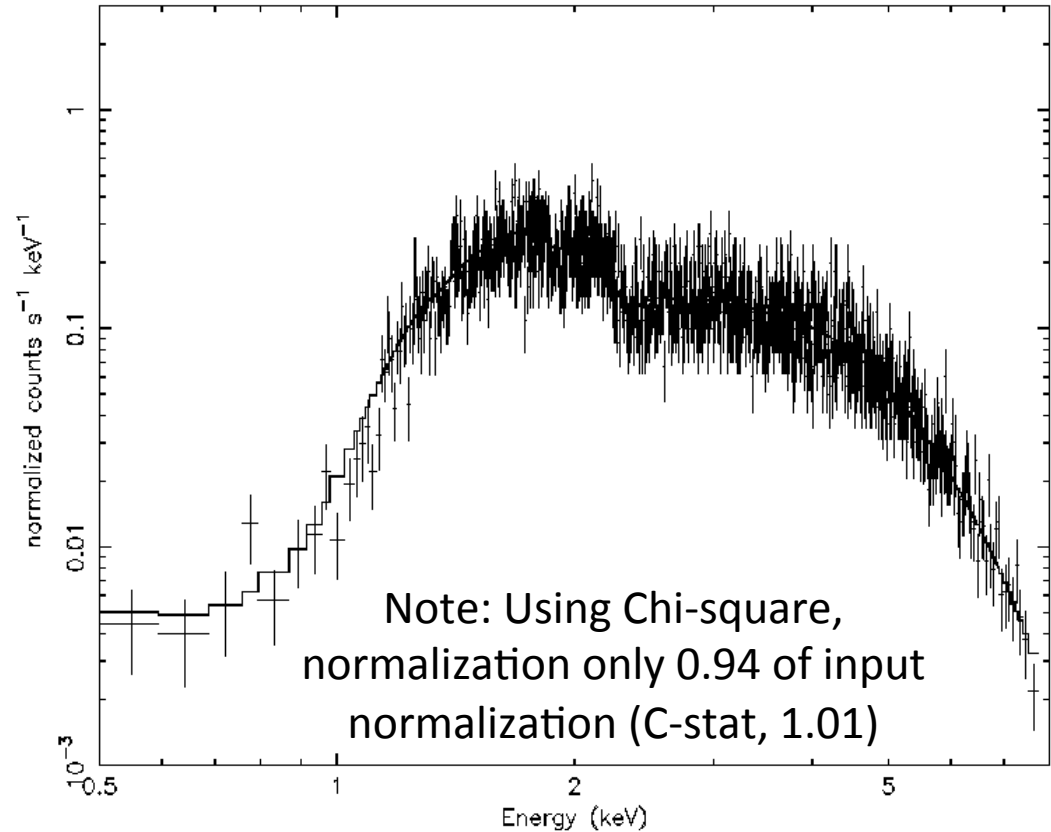
G21.5	Count Rate
0.5-8 keV	0.588 ct/s
0.5-1 keV	0.004 ct/s
1-2 keV	0.181 ct/s
2-4 keV	0.277 ct/s
4-8 keV	0.126 ct/s

Current Theoretical Model



amr30 8-Apr-2014

data and folded model

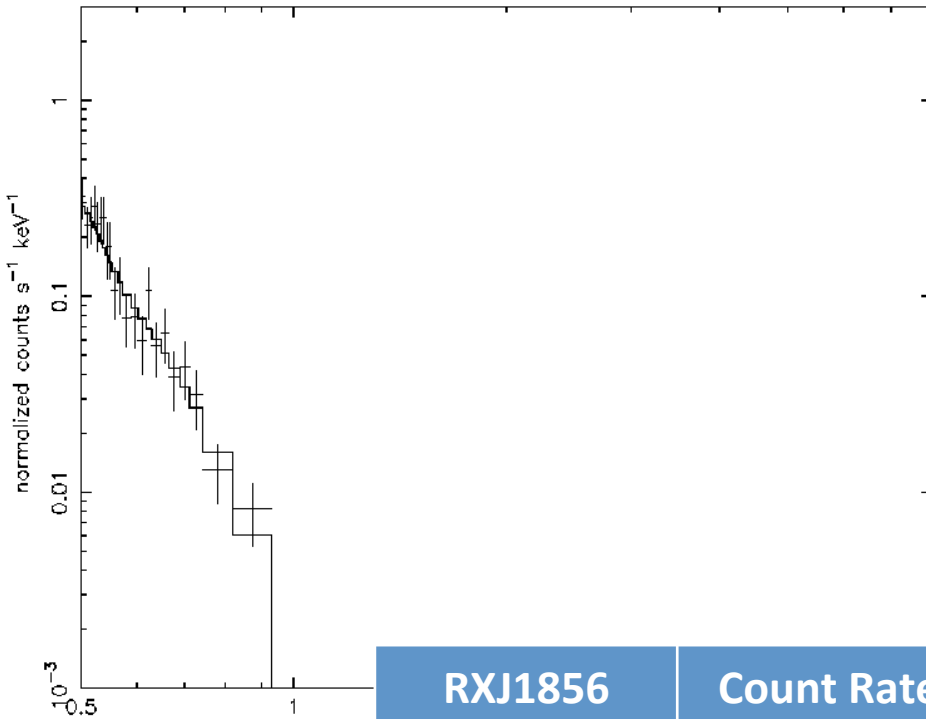


amr30 6-Mar-2014 15:15

0.5-8 keV	nH +/- %	Gamma +/- %	Norm +/- %
20ks	4.4%	3.8%	10.0%

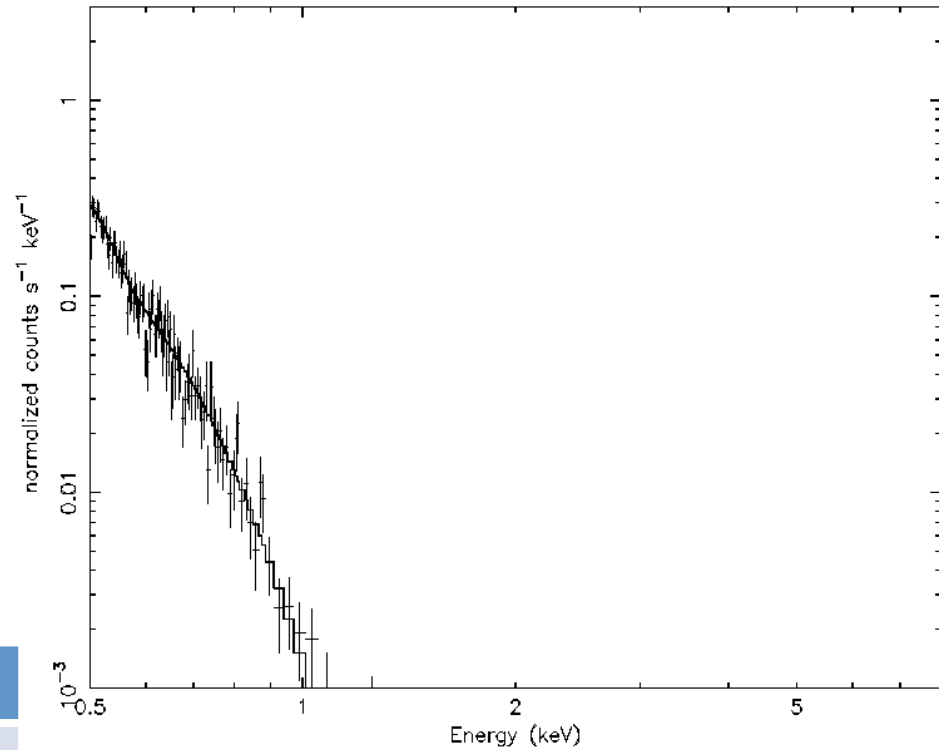
# RXJ1856 – INS – 10ks, 100ks

data and folded model



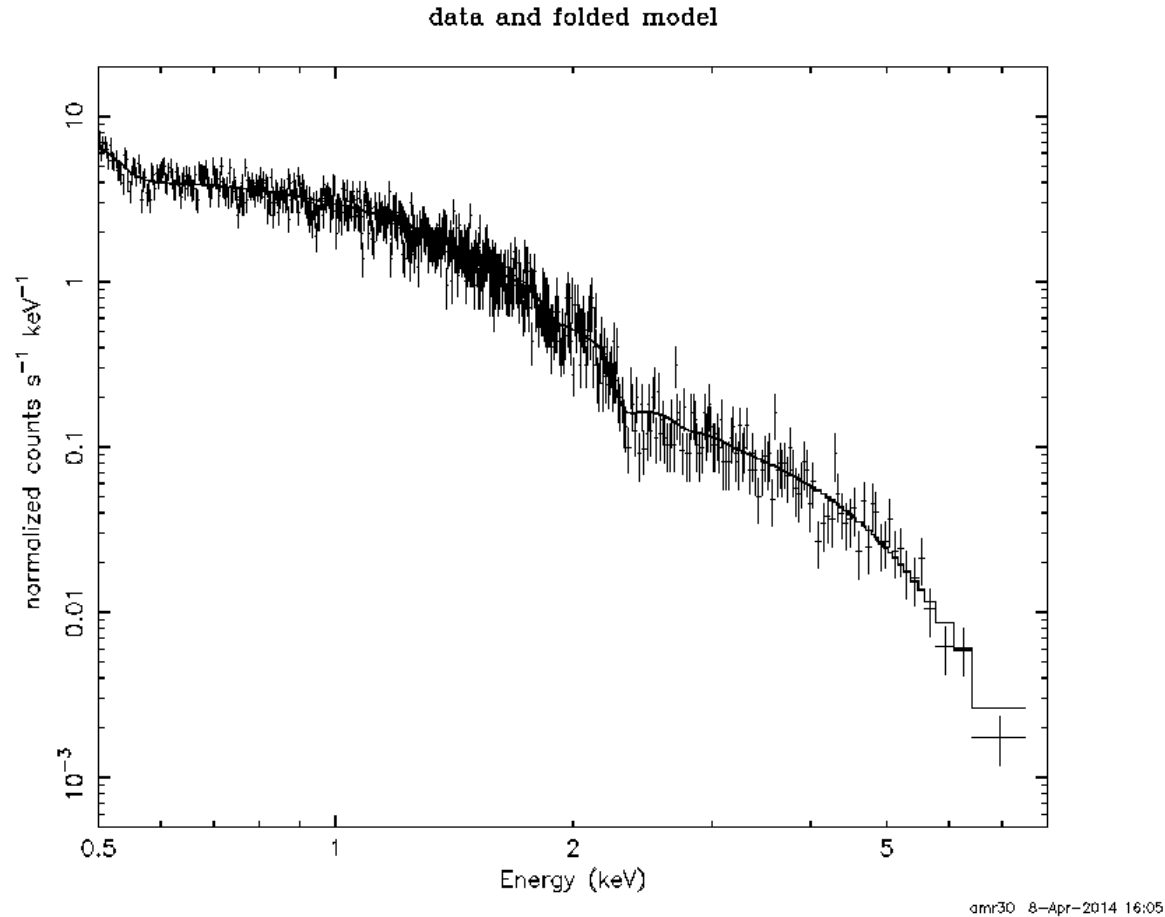
RXJ1856	Count Rate
0.5-8 keV	0.0252 ct/s
0.5-1 keV	0.0251 ct/s
1-2 keV	0.0001 ct/s
2-4 keV	0.0 ct/s
4-8 keV	0.0 ct/s

data and folded model



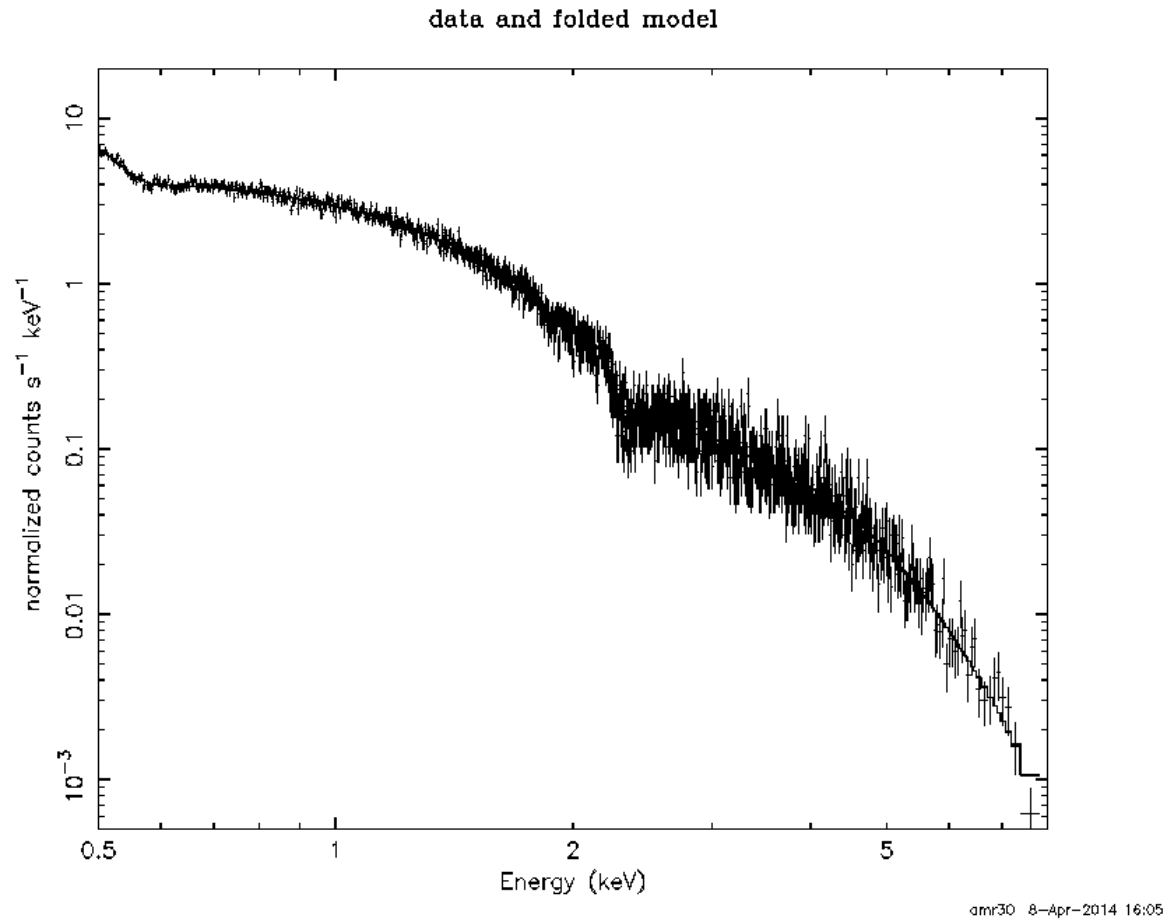
0.5-8 keV	Norm(F) +/- %
10ks	10.1%
20ks	7.5%
100ks	3.3%

# PKS2155 – BL Lac - 5ks

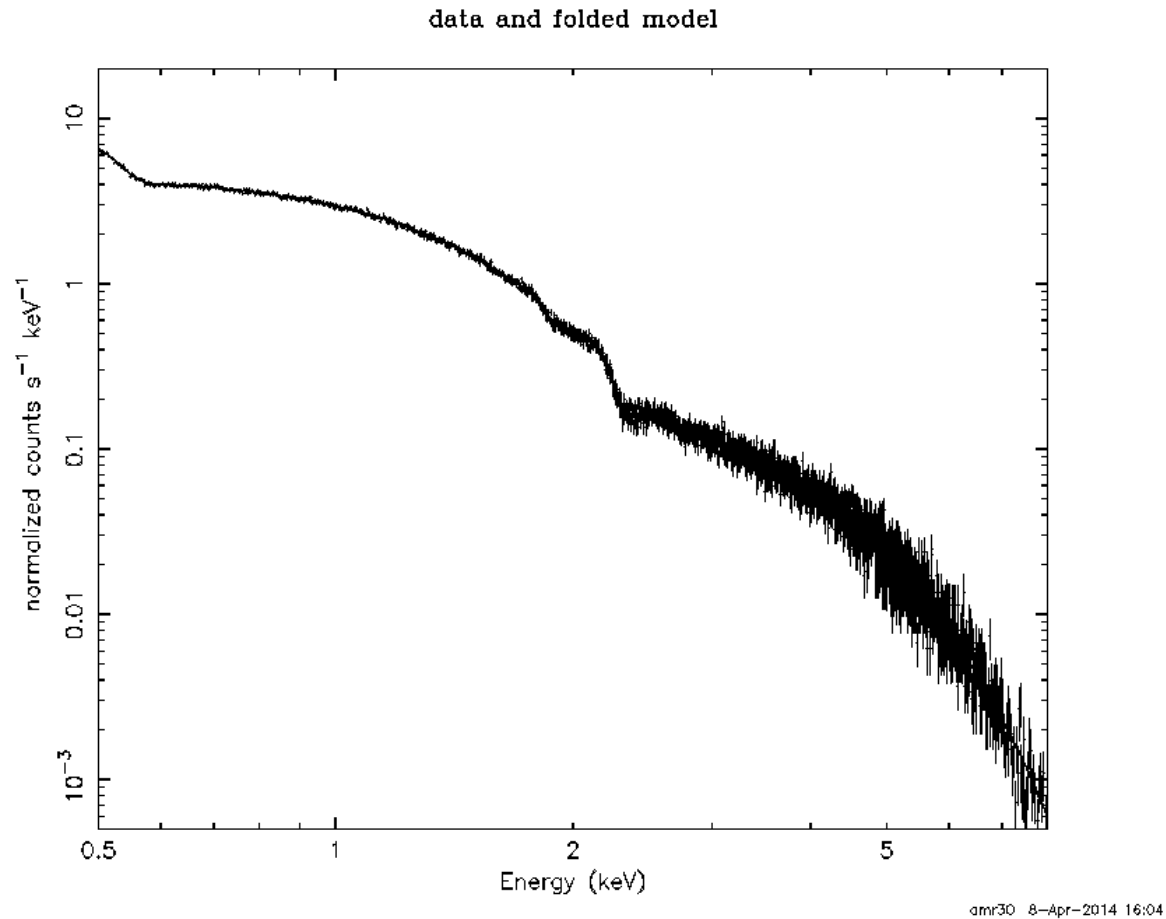


IACHEC 2005 model

# PKS2155 – BL Lac - 30ks



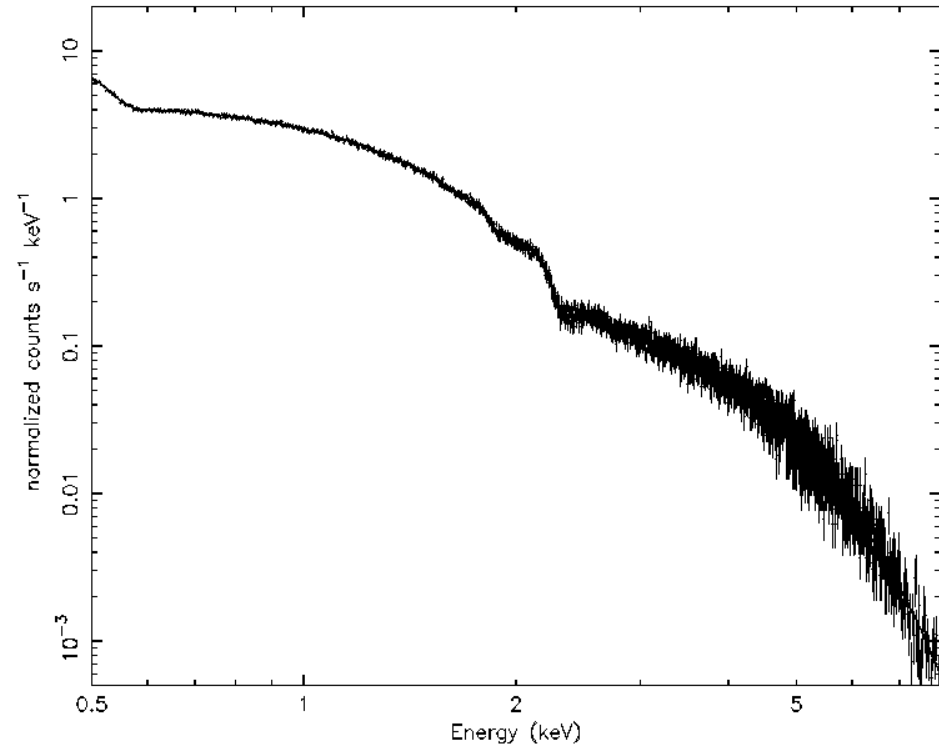
# PKS2155 – BL Lac - 320ks



# PKS2155 – BL Lac

data and folded model

PKS2155	Count Rate
0.5-8 keV	3.79 ct/s
0.5-1 keV	1.90 ct/s
1-2 keV	1.53 ct/s
2-4 keV	0.30 ct/s
4-8 keV	0.06 ct/s



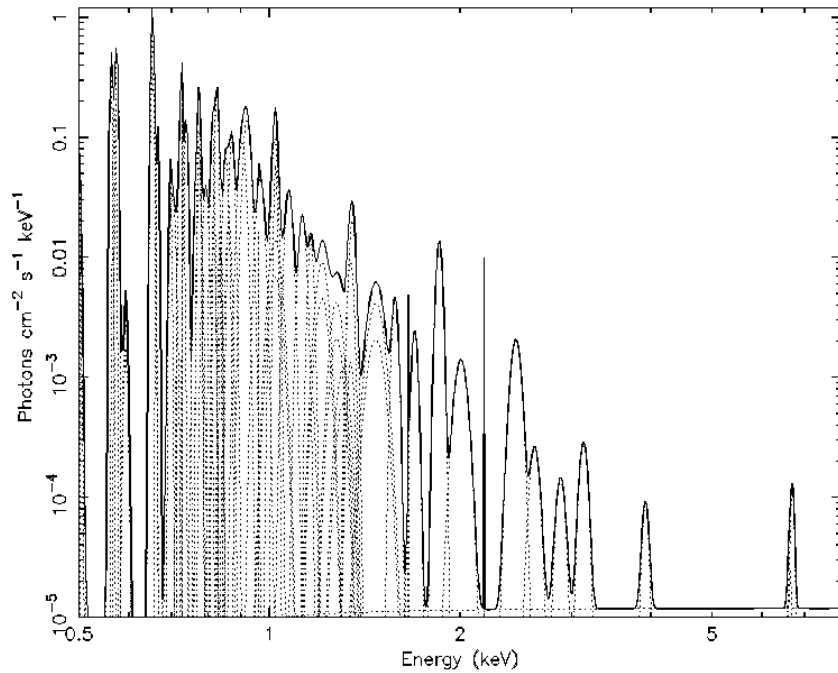
amr30 8-Apr-2014 16:04

0.5-8 keV	nH +/- %	Gamma +/- %	Norm +/- %
5ks	50.0%	2.0%	4.6%
30ks	26.9%	0.8%	1.9%
320ks	7.7%	0.3%	0.6%



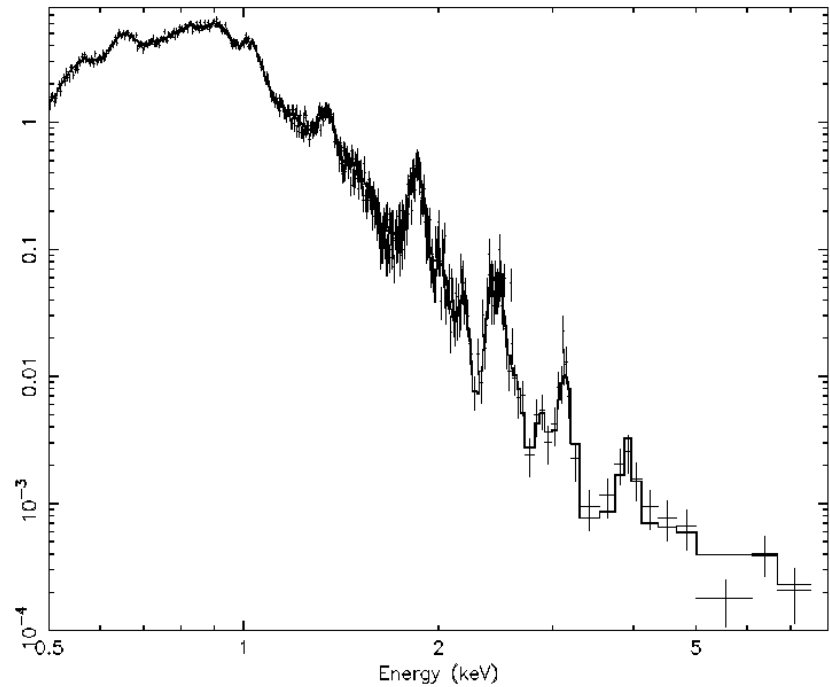
# N132D – Thermal SNR – 40ks

Current Theoretical Model



amr30 8-Apr-2014 16:36

data and folded model

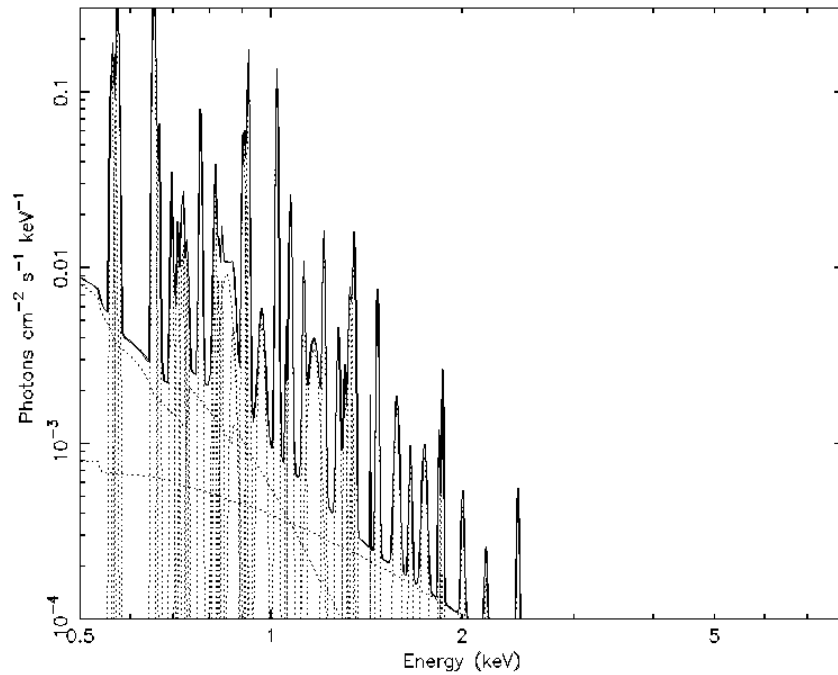


amr30 8-Apr-2014 16:36

0.5-8 keV	Norm (F) +/- %	Ovii +/- %	Oviii +/- %
40ks	0.6%	2.6%	2.1%

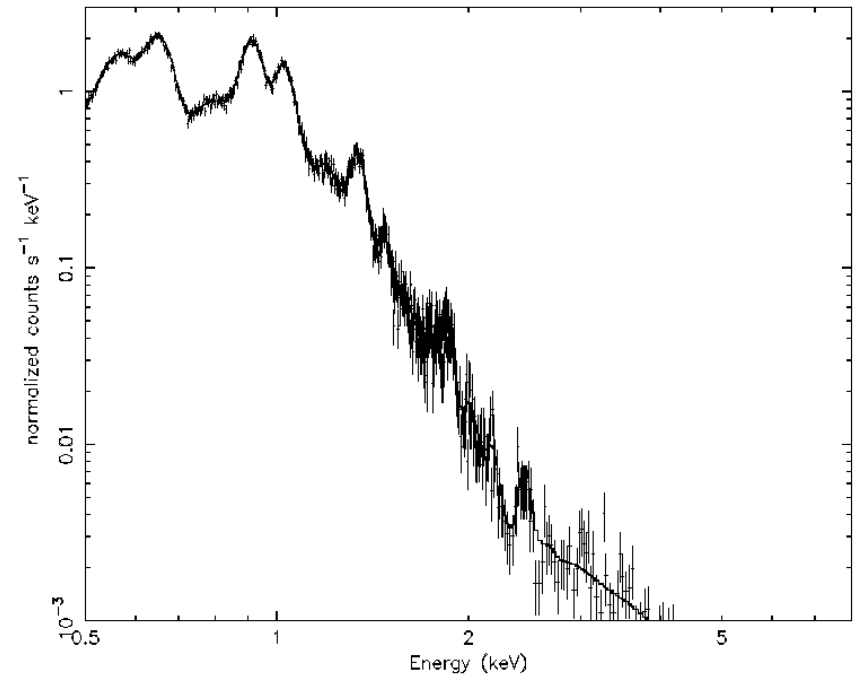
# 1ES0102 – Thermal SNR

Current Theoretical Model



amr30 8-Apr-2011

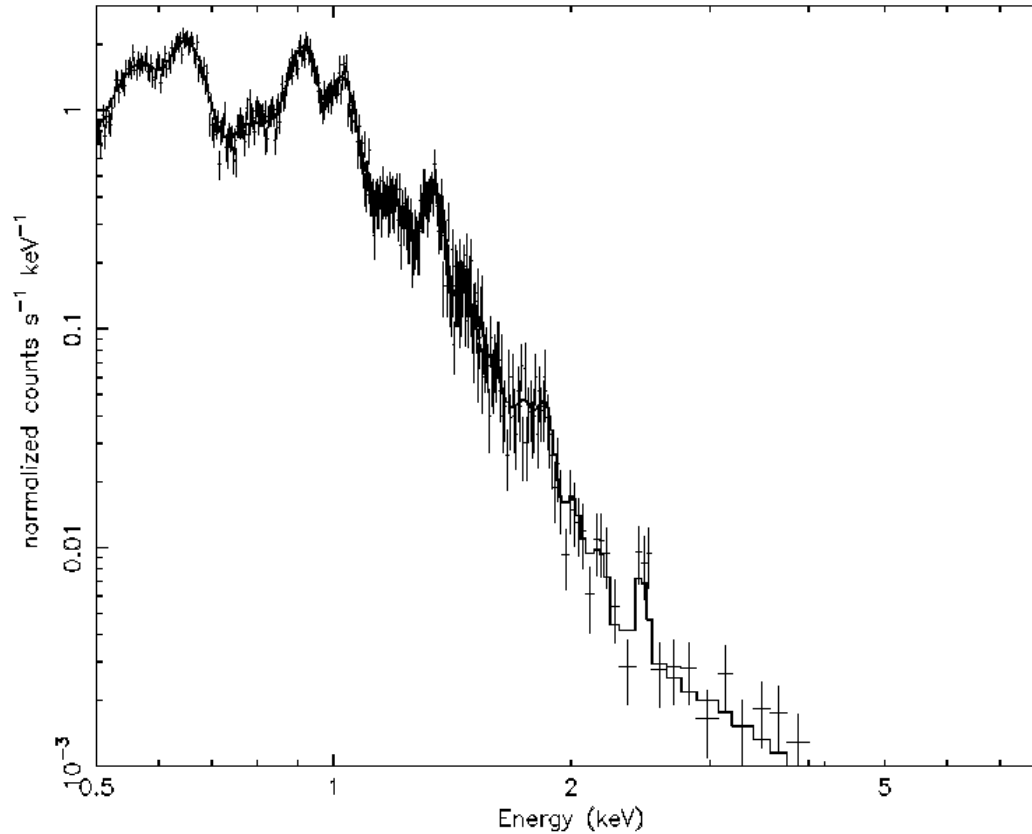
data and folded model



amr30 8-Apr-2014 16:31

# 1ES0102 – 30ks

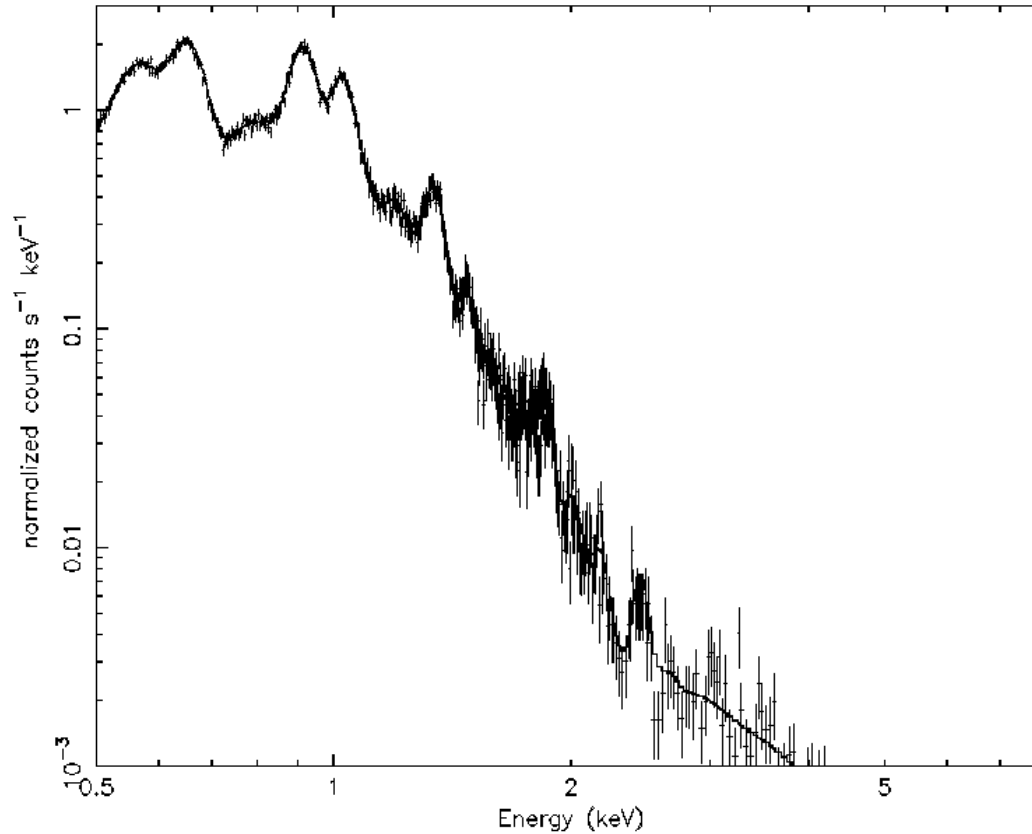
data and folded model



amr30 8-Apr-2014 16:32

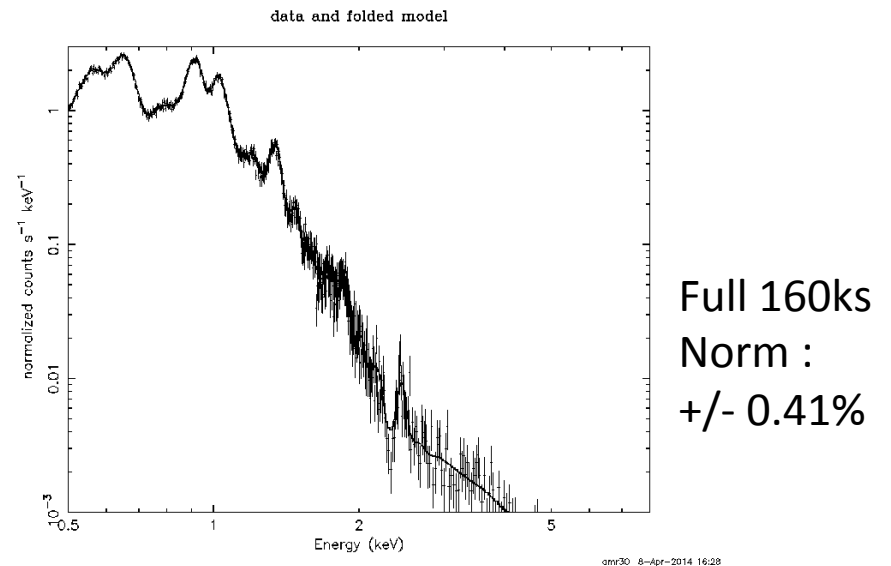
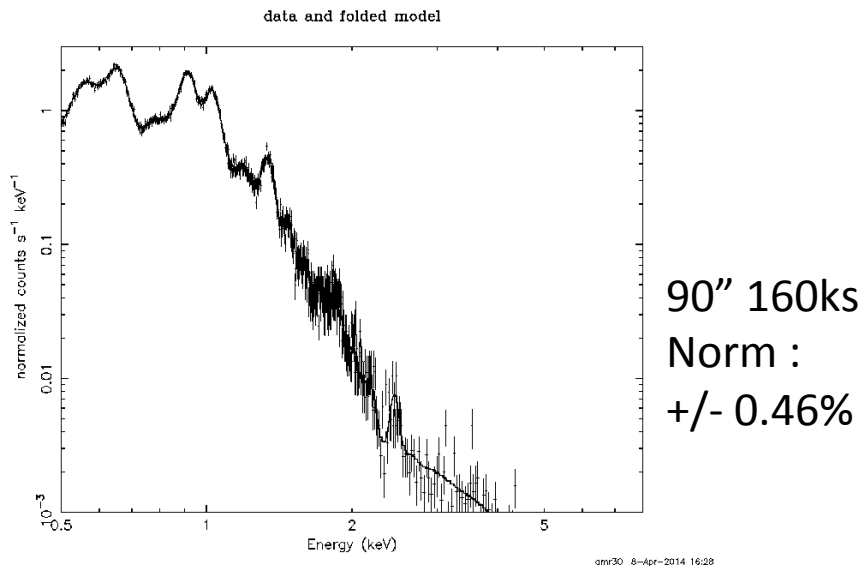
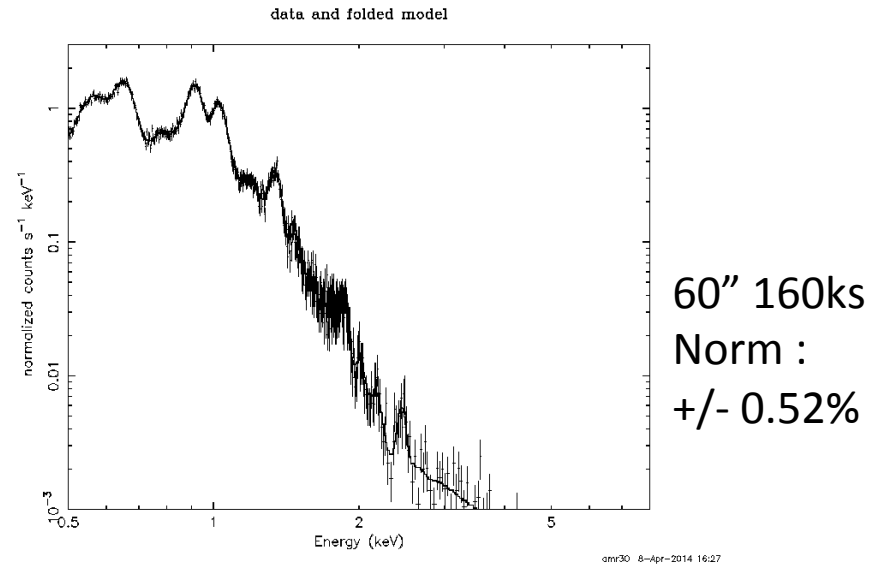
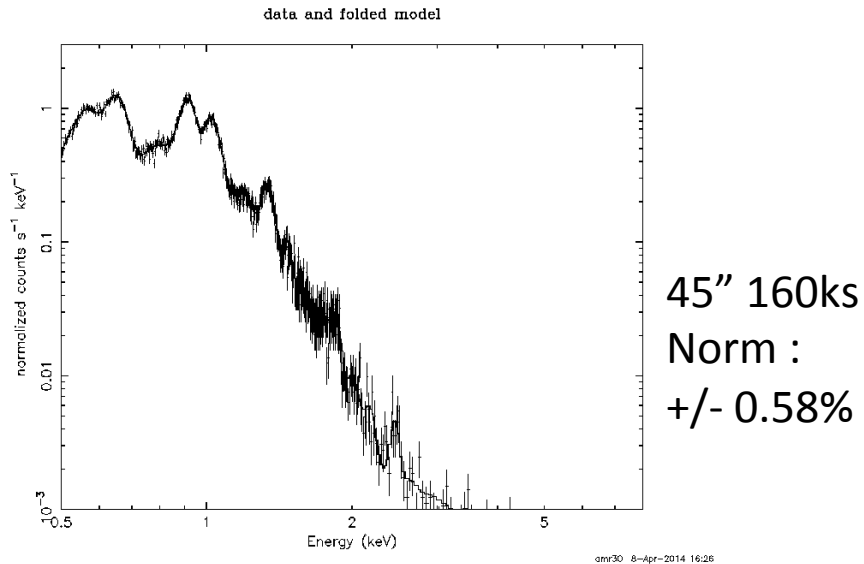
# 1ES0102 – 160ks

data and folded model



amr30 8-Apr-2014 16:31

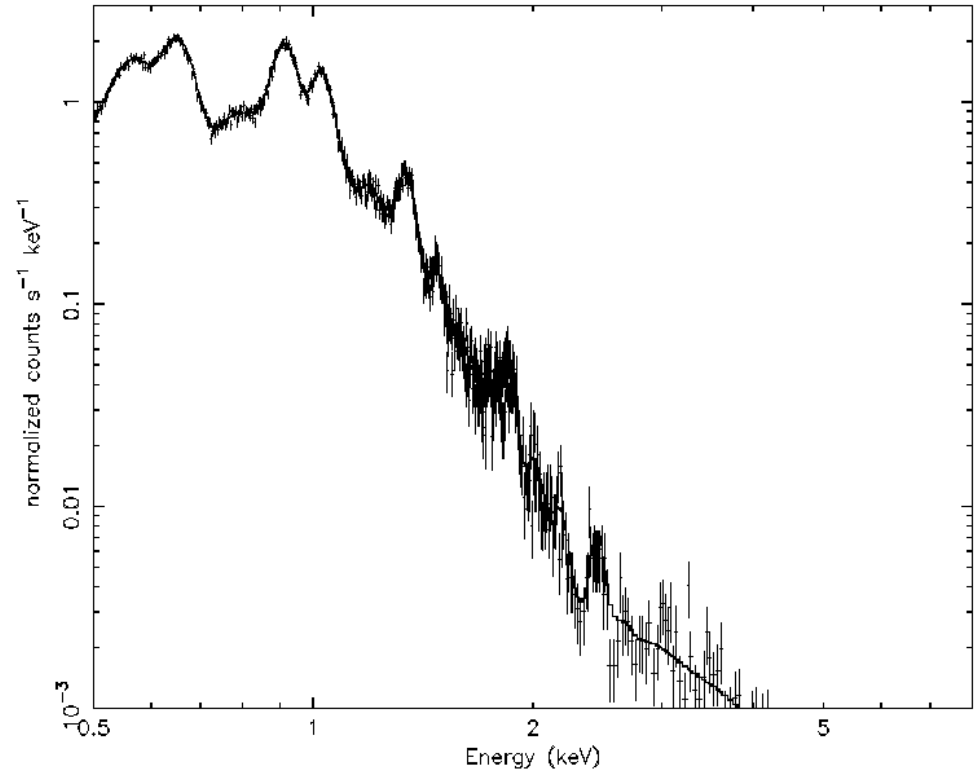
# 1ES0102 – ARFs 45", 60", 90", full



# 1ES0102 – 30ks, 160ks

data and folded model

1ES0102	Count Rate
0.5-8 keV	0.919 ct/s
0.5-1 keV	0.654 ct/s
1-2 keV	0.254 ct/s
2-4 keV	0.007 ct/s
4-8 keV	0.001 ct/s

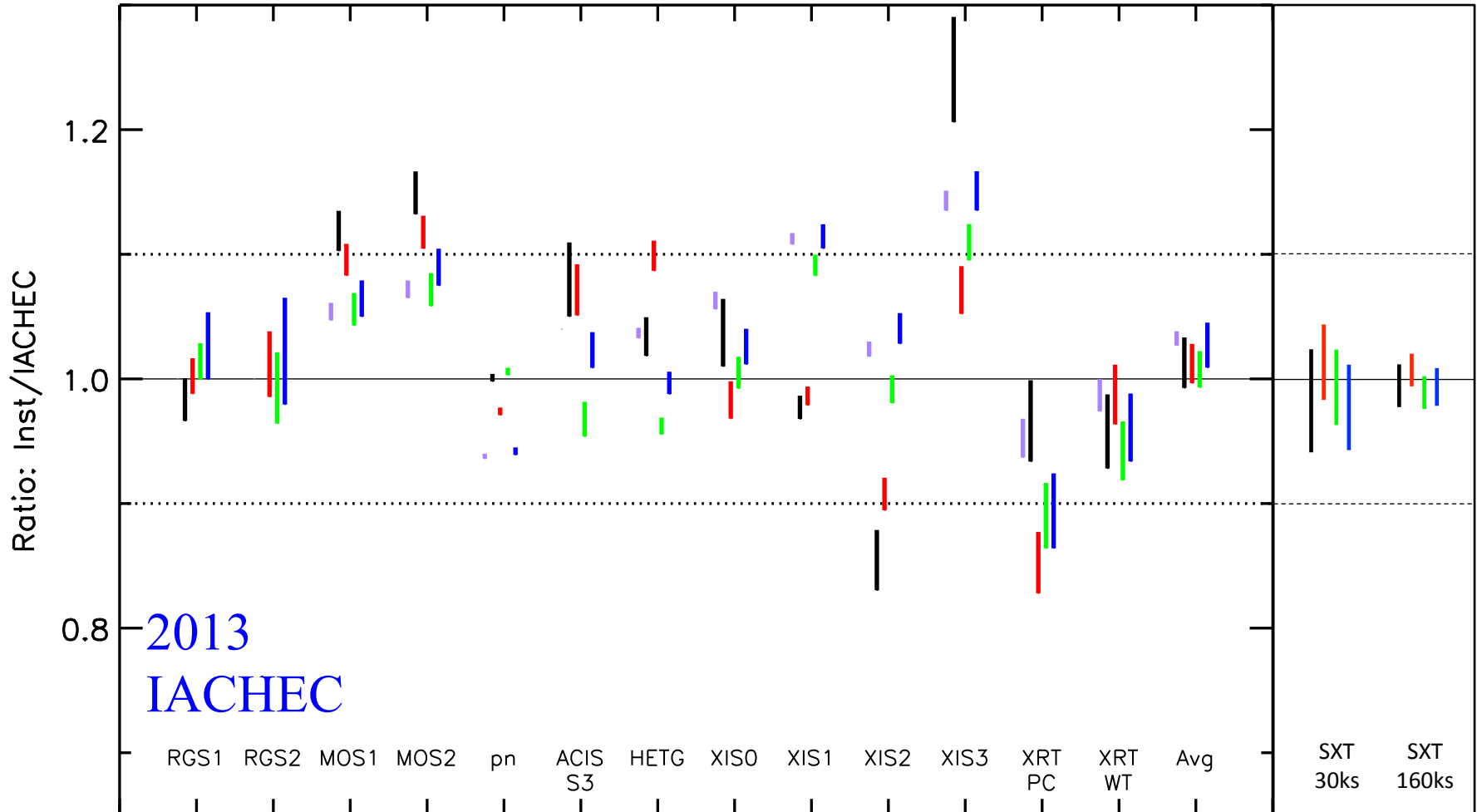


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0.5-8 keV	Norm (F) +/- %	Norm (4L) +/- %	Ovii +/- %	Oviii +/- %	Ne ix +/- %	Ne x +/- %
30ks	1.0%	2.2%	5.0%	3.9%	4.0%	4.7%
160ks	0.5%	0.9%	2.1%	1.7%	1.8%	2.0%

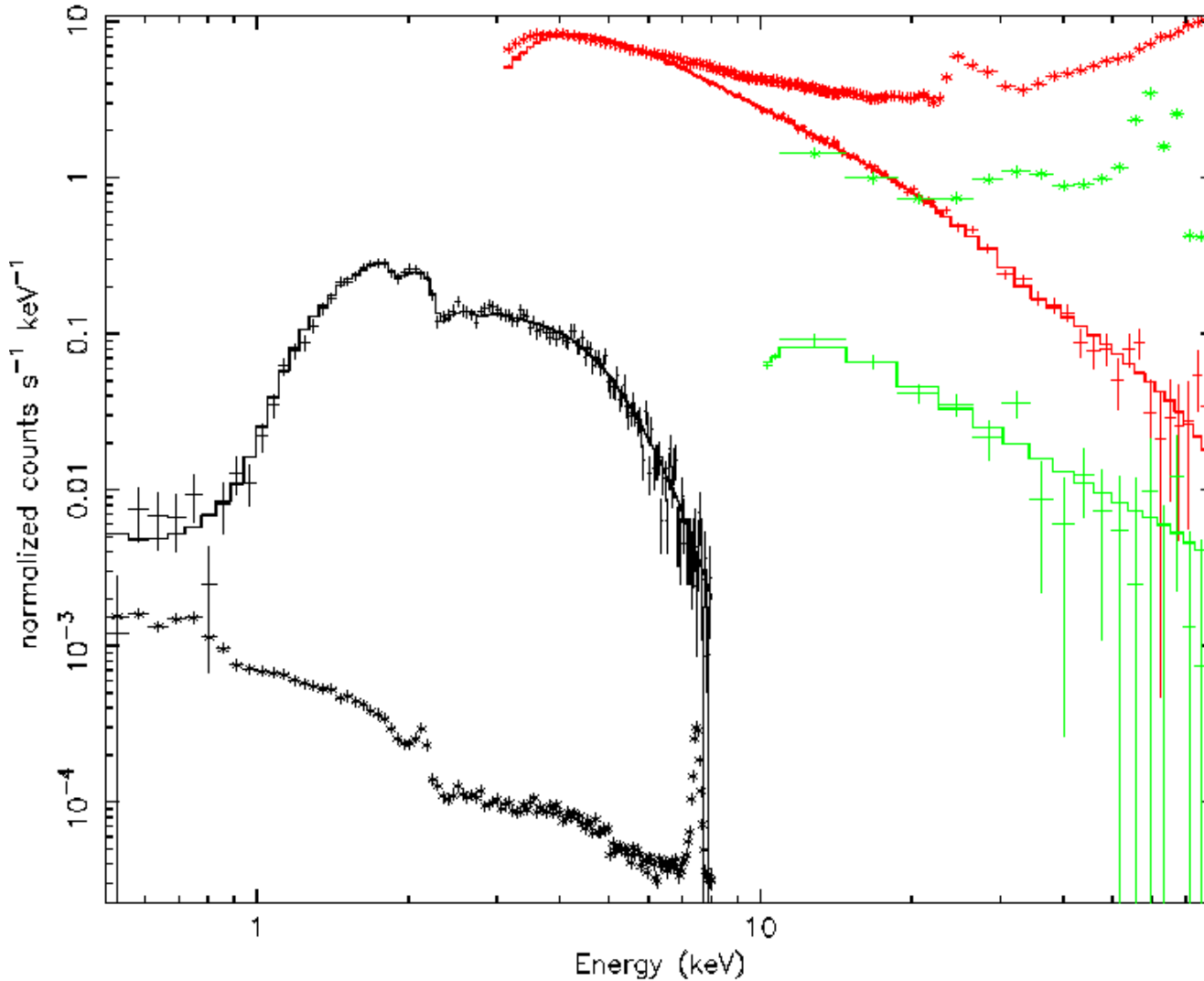


# 1ES0102



# G21.5 – 20ks – SXT, LAXPC, CZT

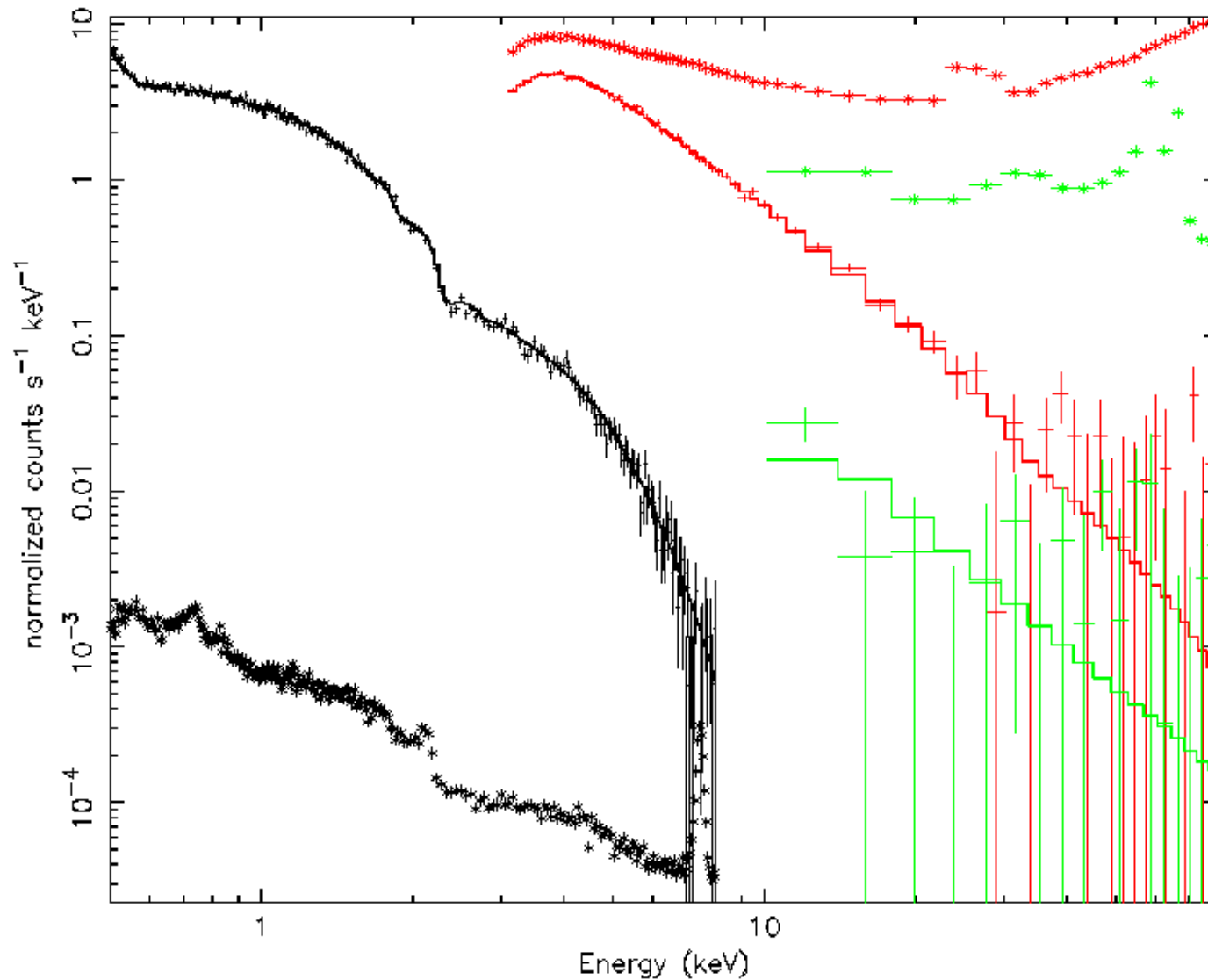
data and folded model



amr30 15-Apr-2014 17:26

# PKS2155 – 30ks – SXT, LAXPC, CZT

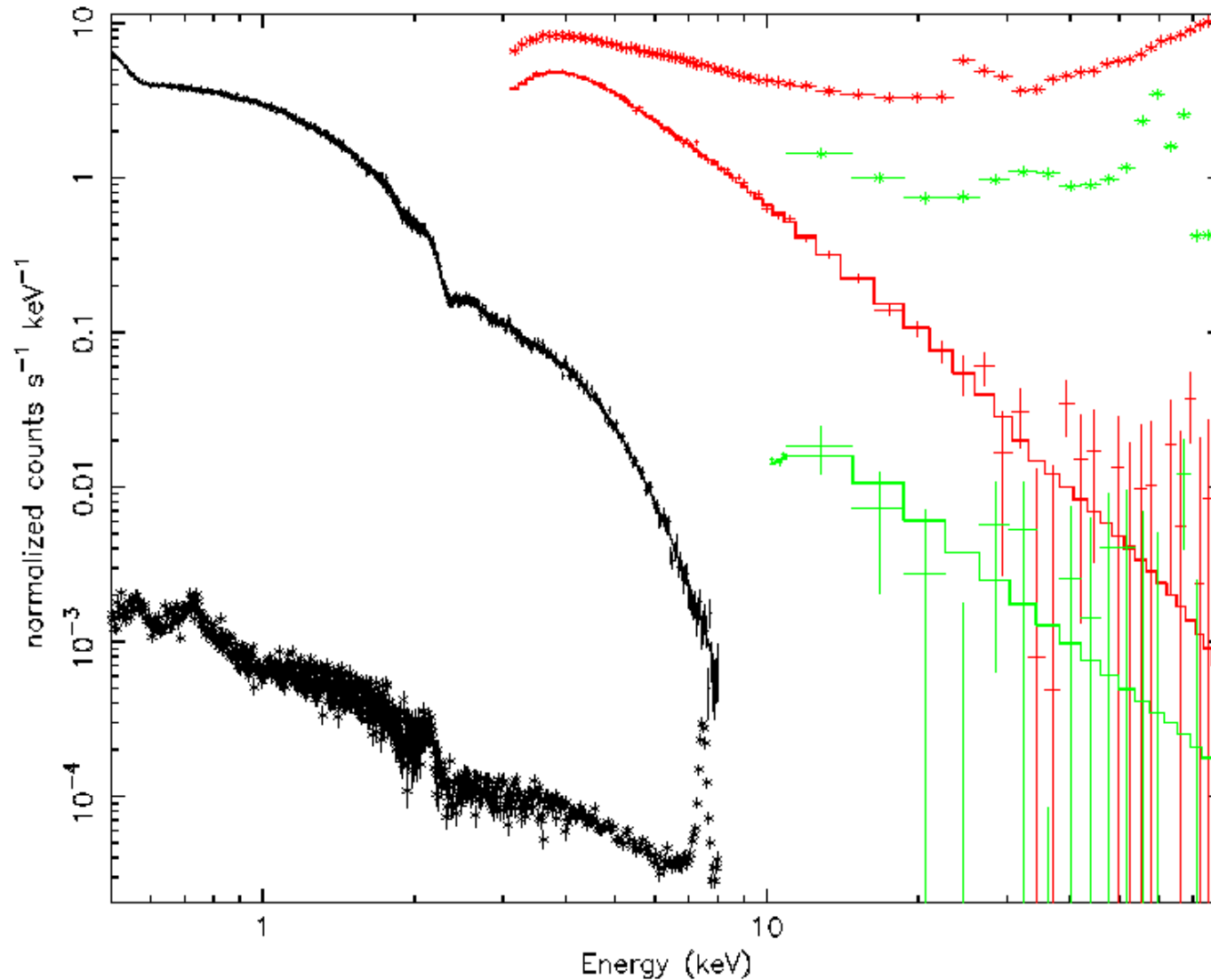
data and folded model



amr30 15-Apr-2014 17:29

# PKS2155 – 320ks – SXT, LAXPC, CZT

data and folded model



amr30 15-Apr-2014 17:28