Preliminary work on:
HIGH ENERGY SPECTRAL EVOLUTION OF THE INTEGRAL SOURCE: IGR J17091-3624

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1. **IGR J17091-3624 is one of the 28 unknown new objects reported in the survey catalogue (20-100 keV) published in May 2004.**

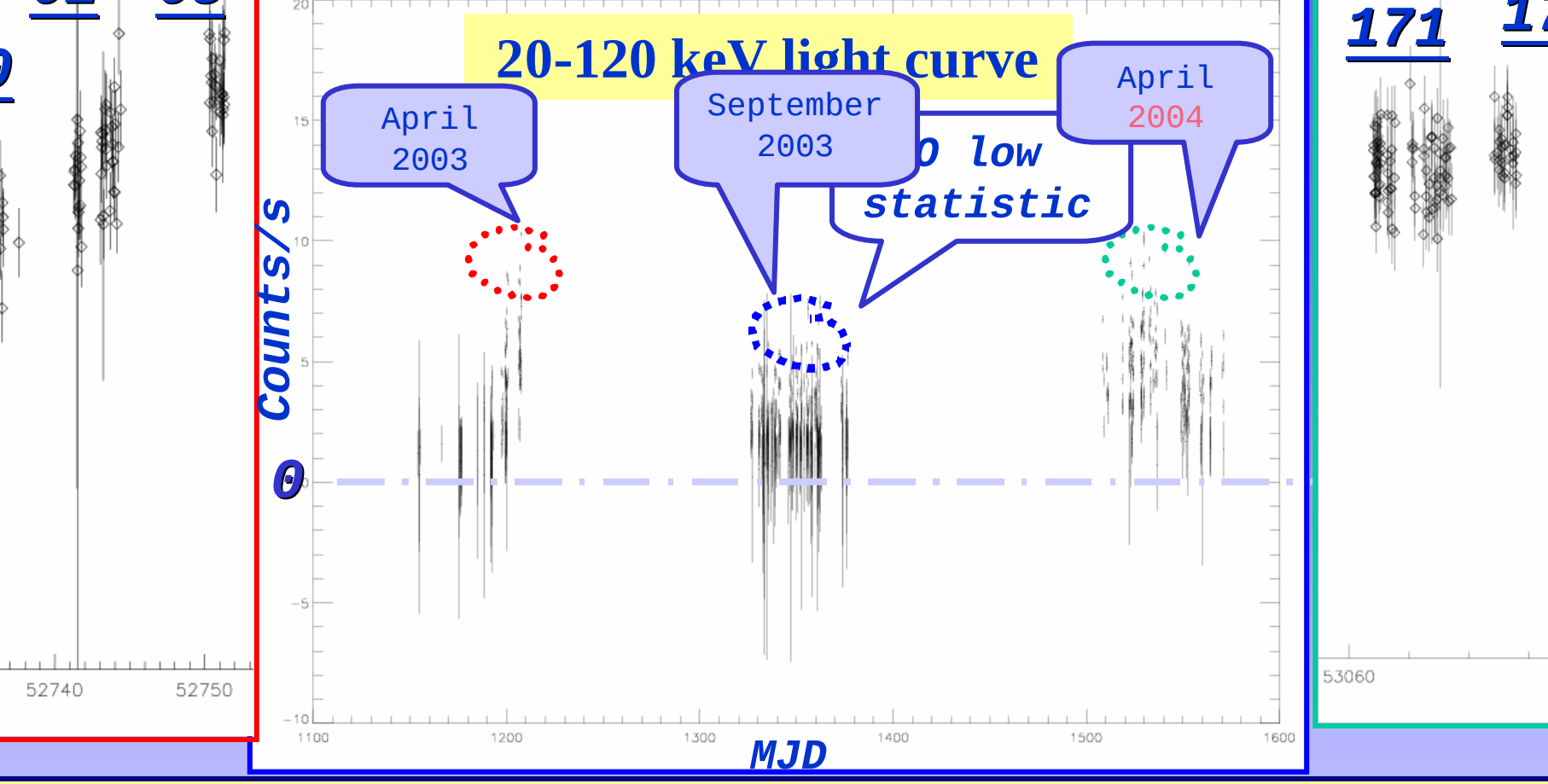
2. **it was detected in the survey data up to 150 keV with an intensity of 8mCrab in the range 20-40 keV.**

3. **INTEGRAL observed it for the first time on April 14-15 2003 in the energy range 40-100 keV (RA=17h09.1m and DEC=-36o24m38s, err = 3')** [E. Kuulkers, A. Lutovinov, A. Parmar , F.Capitanio et al. ATEL n. 149,2003 Apr 19].

4. **IGR J17091-362 was then found in the data archive of Beppo SAX WFC.** [J.J.M. in 't Zand, J. Heise, P. Lowes , P. Ubertini, ATEL n. 160 2003 May 20].

Data Analysis

1. The observations are not continuous, but cover an overall period of one year from 2003 April to 2004 April
2. We analysed IBIS data (public and Core Program), using the Off-line Scientific Analysis (OSA version 4.1).
3. FCFOV and PCFOV were used for light curve extraction. Only FCFOV data was selected for spectral extraction and fitting.
4. Following the entire spectral evolution of the source was not possible because of statistical limitations.



1. light curve extracted integrating all flux from 20 to 120 keV
2. Spectra extracted for:

   revolutions 61, 63,

   a few scw from revolutions 170, 172

   (Statistics too low for revolutions 105-111 to make spectral analysis)

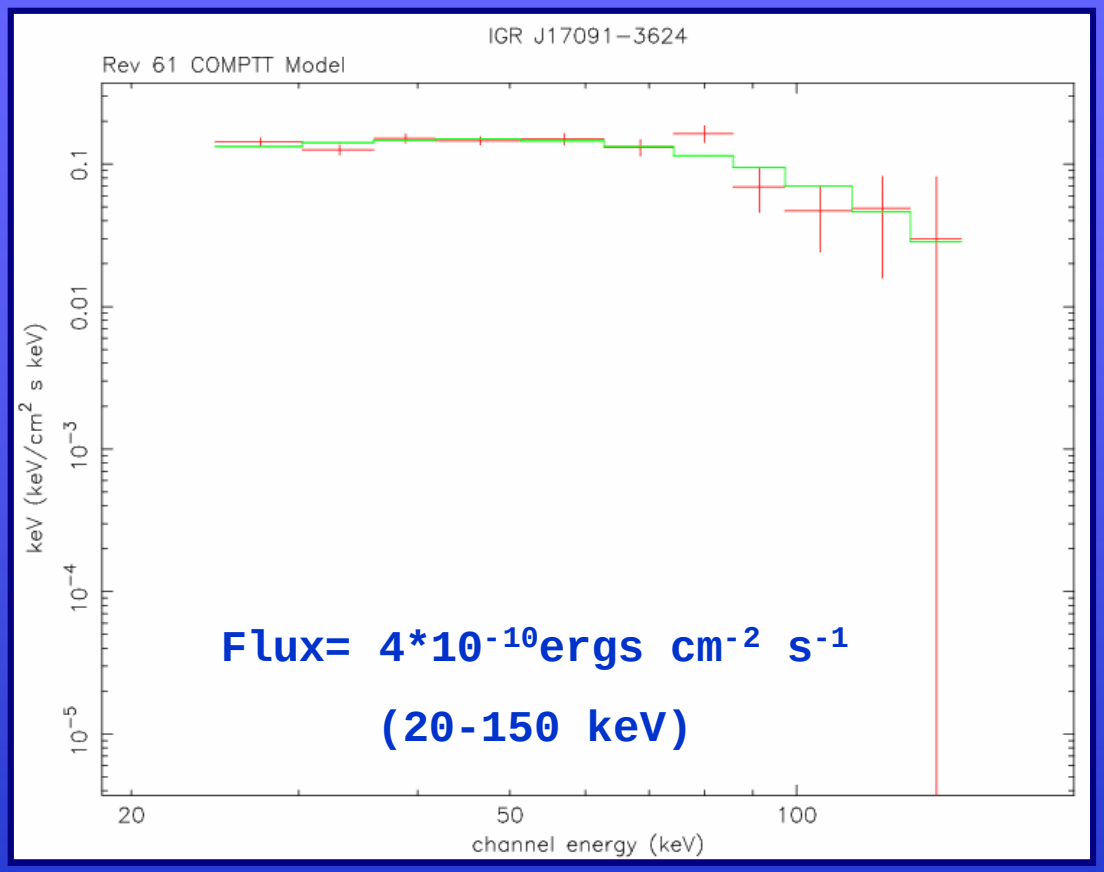
Spectral Analysis: Rev60-Rev63

REV 60

1. the data corresponds to a period around the maximum flux in the light curve (Rev 63).
2. The first revolution analysed, 60, has too poor statistics and the IBIS spectrum has few points (integration time ~22 Ks).

4. The spectrum fitted with a comptt model gives a 20-100 keV flux of $2*10^{-10}$ ergs cm^{-2} s^{-1}.
   The fit has an acceptable c^2 =1.1 but the parameters are obviously not well constrained.

REV 61

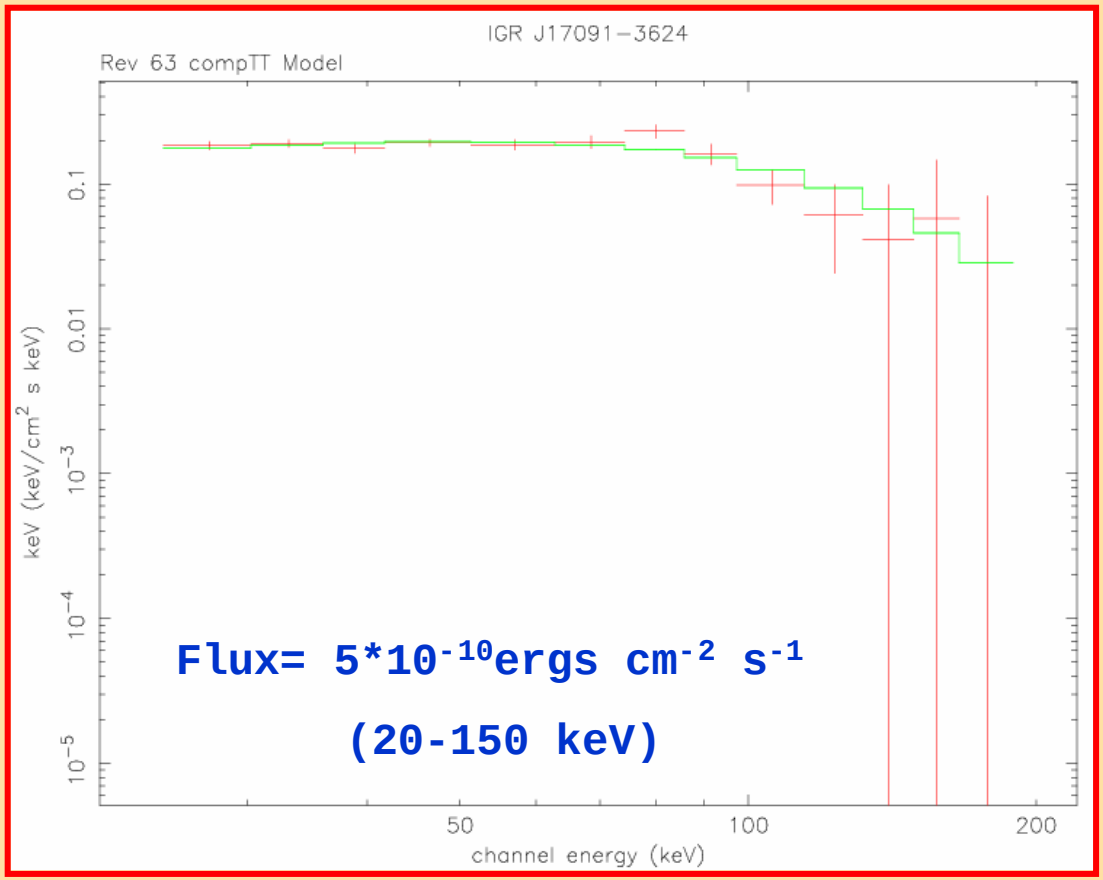


kT	18_{15}^{23}
t_p	$2.6_{1.8}^{3.6}$
norm	$(3_2^4)10^{-3}$
? ^{2}/? ?=8	1.3 (sysErr.=0.02)

1. **The flux is increased from $2*10^{-10}$ to $4*10^{-10}$.**
2. **a lot of science windows in the FCFOV (integration time~84 Ks)**

3. **Well constrained CompTT spectrum**

REV 63



kT	22_{18}^{28}
t_p	$2.1_{2.8}^{1.5}$
norm	$(4_5^3)10^{-3}$
? ^{2}/? ?=10	1.0 (sysErr.=0.02)

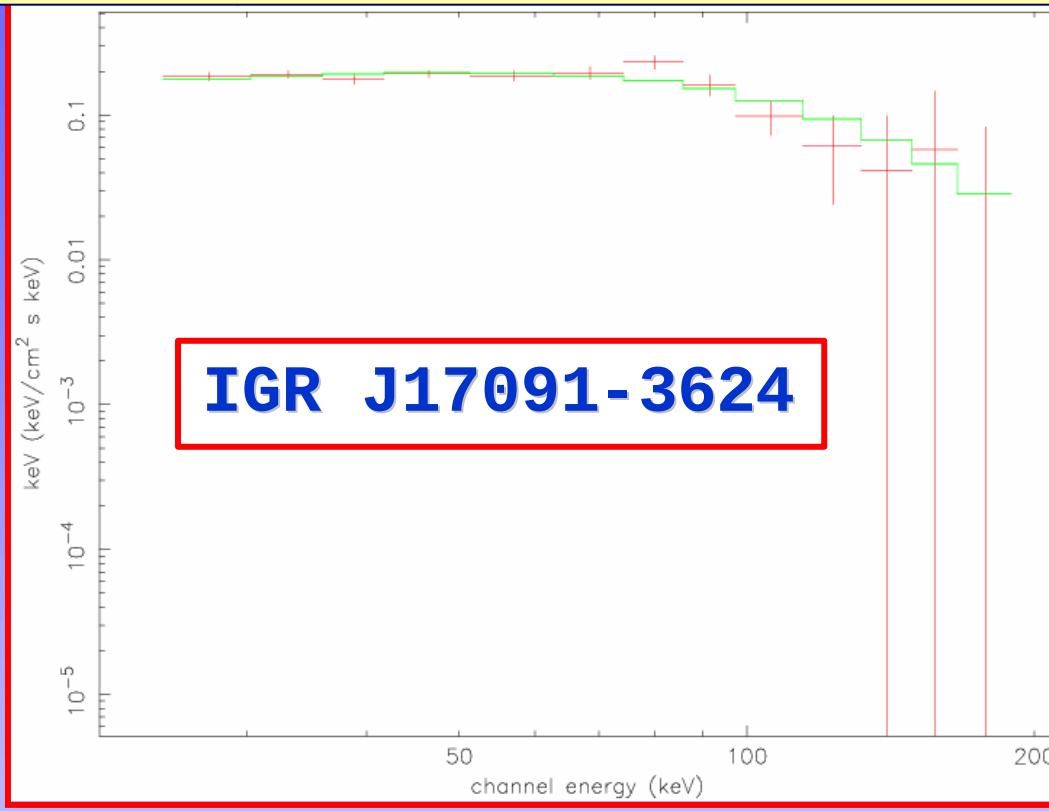
1. **Integration time ~ 83 Ks**
2. **There is essentially no difference in the spectral parameter between revolution 61 and 63.**

IGR 17464-321 / IGR17091-3424

IGR J17464-321

$Kt=17^{21}_{14}$

$t_p=3^{2}_{4}$



IGR J17091-3624

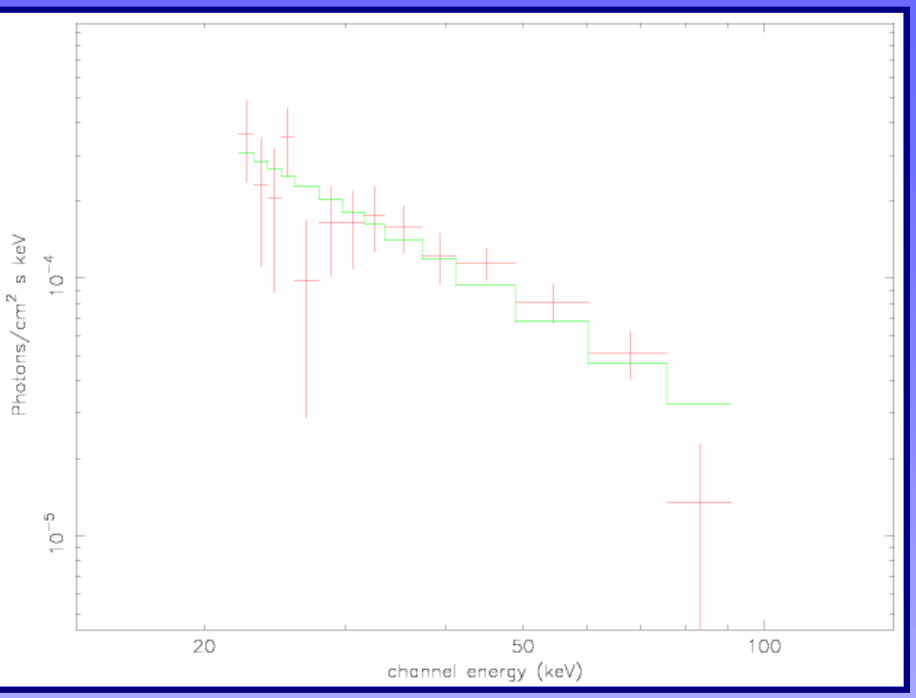
$Kt=22_{18}^{28}$

$t_p=2.1_{2.8}^{1.5}$

The hard spectrum is an indication of BHC …?

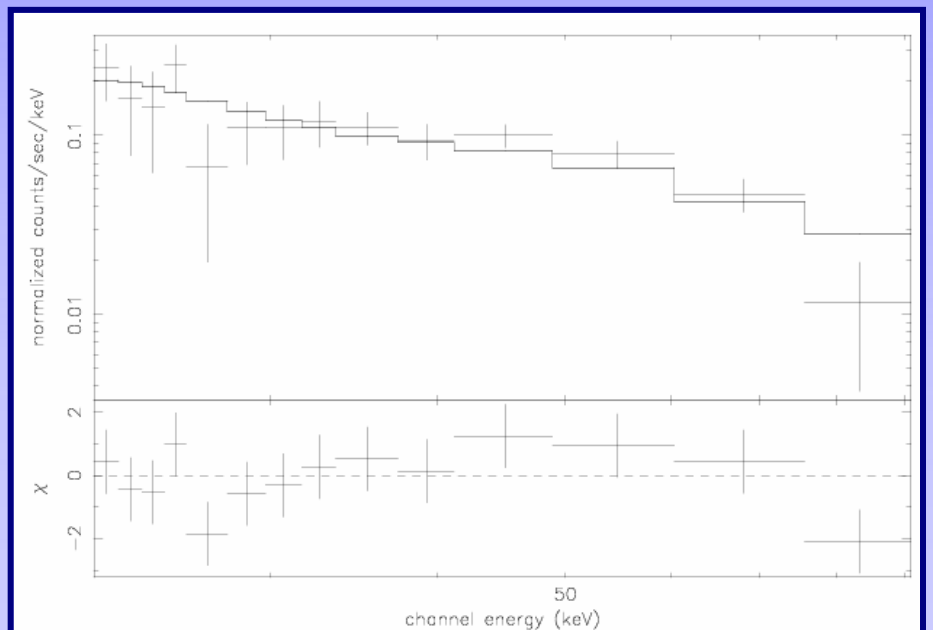
Rev 171

Pho in.	$1.7_{1.4}^{2.0}$
? ^{2}/? ?=6	1.1

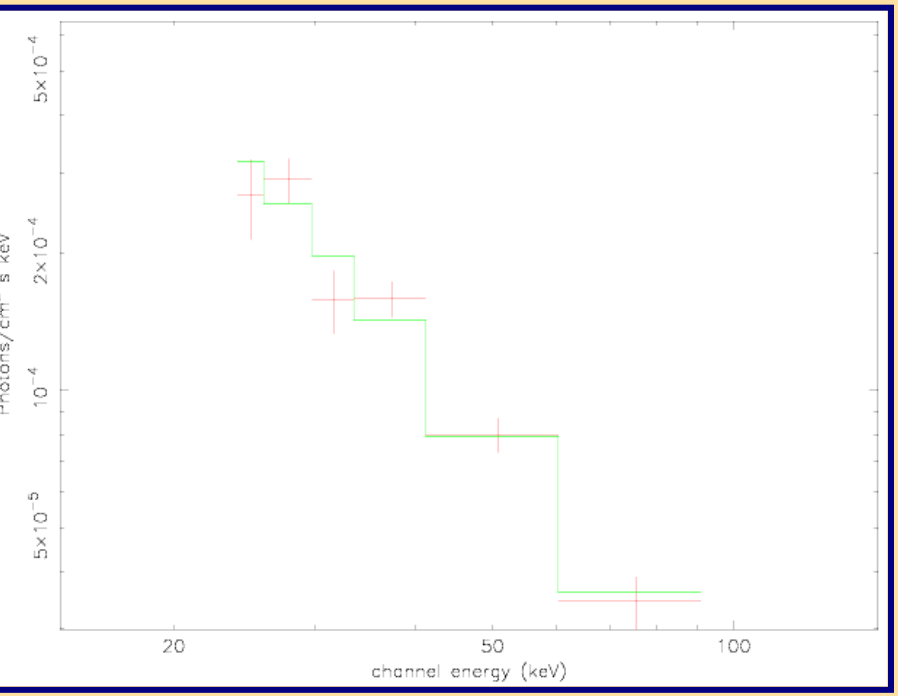


Flux= 5*10^{-10}ergs cm^{-2} s^{-1}

25-100 keV



1. **Few science windows in the FCFOV**
2. **Integration time ~22 Ks**
3. **Poor statistics**
4. **The spectrum is well fitted with a power law model (in agreement with Lutovinov et al. 2004)**

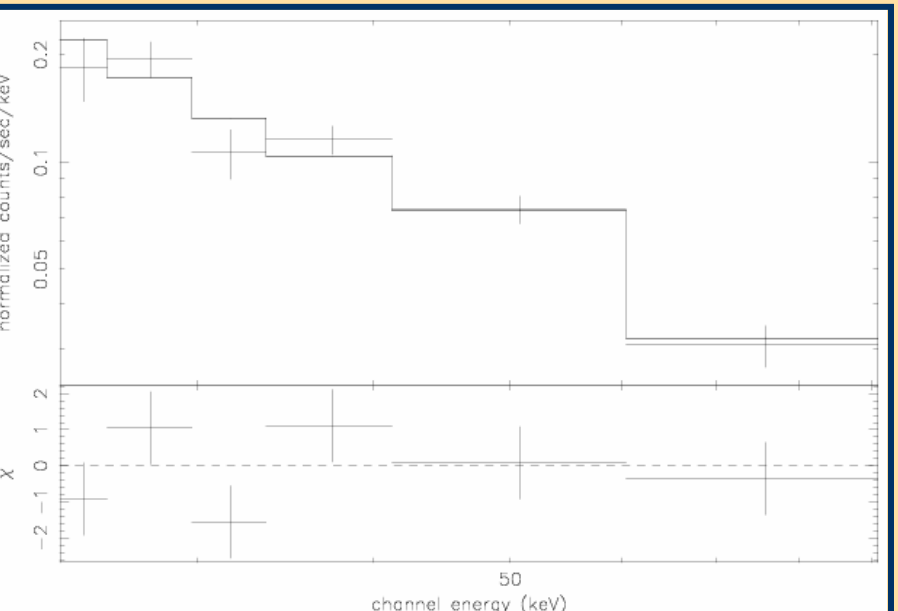


Rev 172

Pho in.	$2.0_{1.8}^{2.2}$
? ^{2}/? ?=7	1.4

Flux= 6*10^{-10}ergs cm^{-2} s^{-1}

25-100 keV



1. **Was possible to extract the spectrum only for 5 scw**
2. **Integration time ~ 11 Ks**

Future work and conclusions

1. Fitting all the spectra with the same model does not show any evidence of spectral variability with time.
2. There is not enough statistics to see the differences between the spectra in revolutions 60-63 and the spectra in revolutions 171-172.
3. The spectra are hard, this could be an indication of BHC.
4. The analysis (when it is possible) of JEM-X data could clarify the source spectral nature.