

# X-ray pulsars observed with INTEGRAL

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CP topics: 5.3.5.1, 5.3.5.2, 5.3.5.3, 5.3.8.1)

*in collaboration with*

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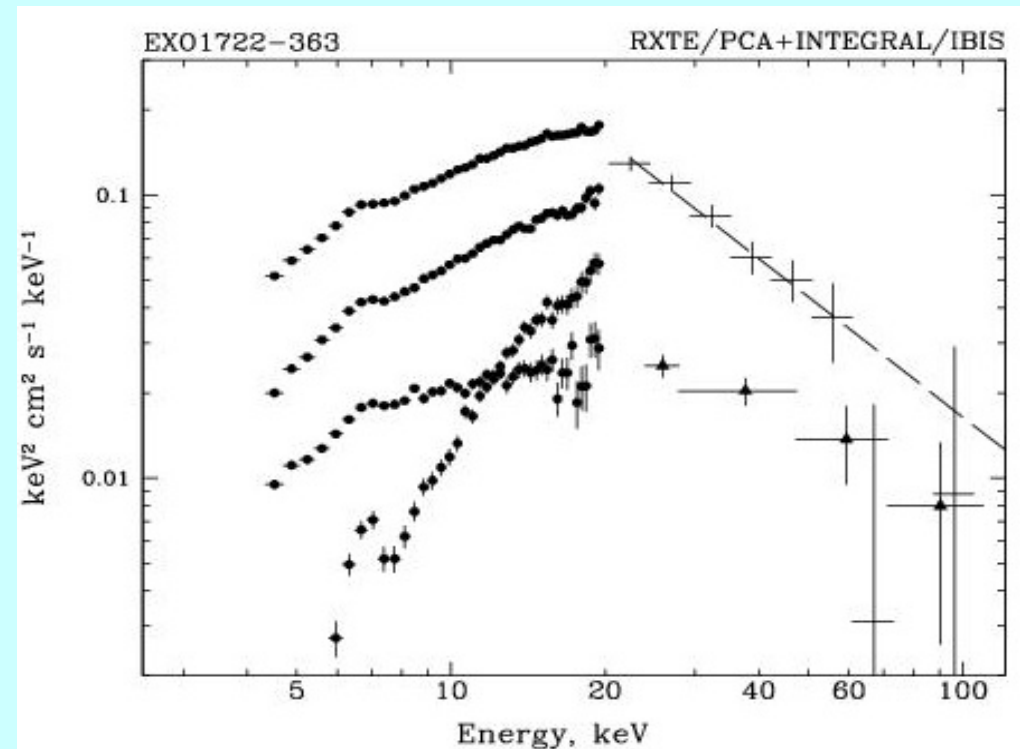
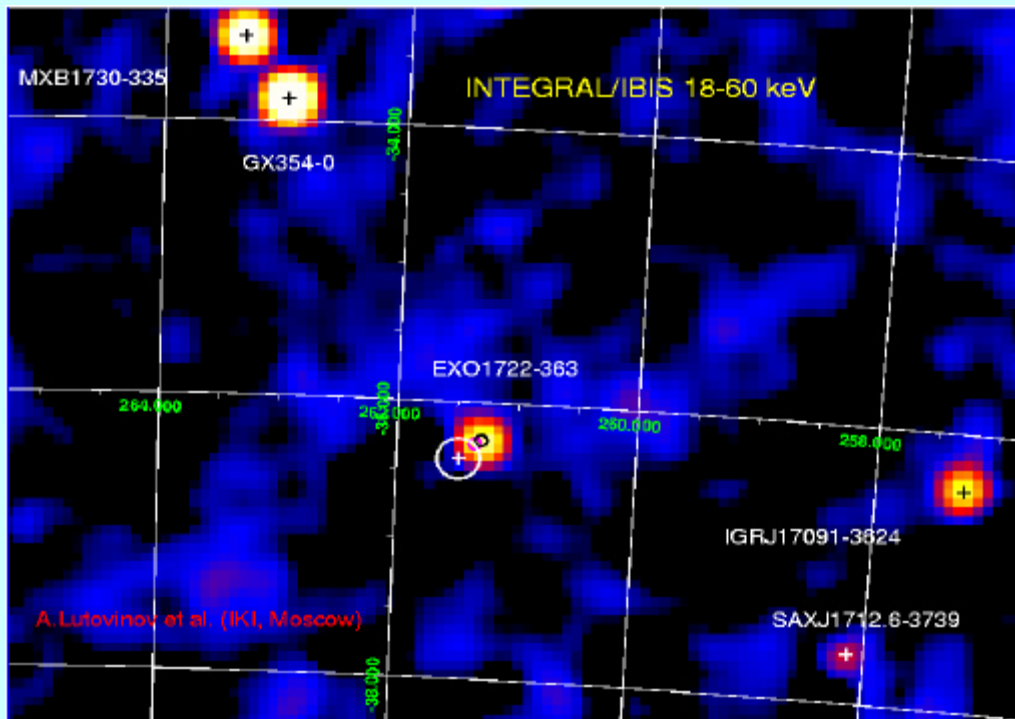
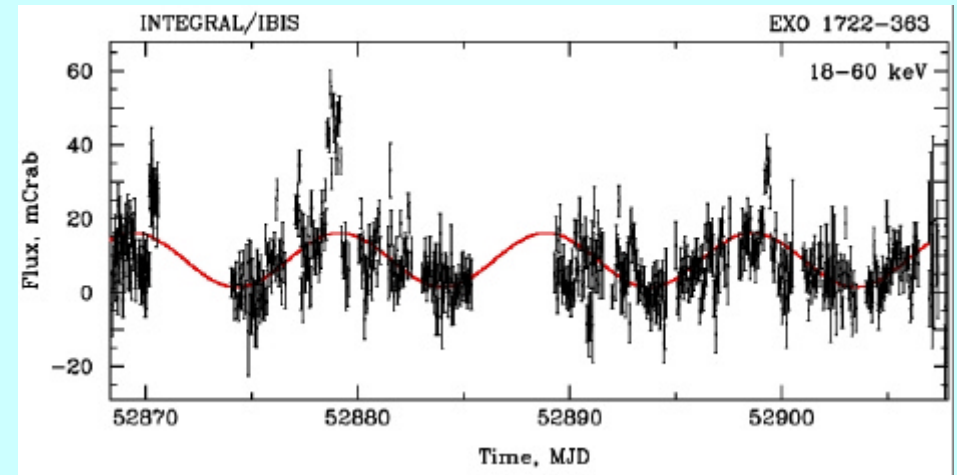
*Kazan), M.Chernyakova (ISDC)*

# EXO1722-363

Observations with INTEGRAL (Core Program) and RXTE. New localization (accuracy  $\sim 2$  arcmin)

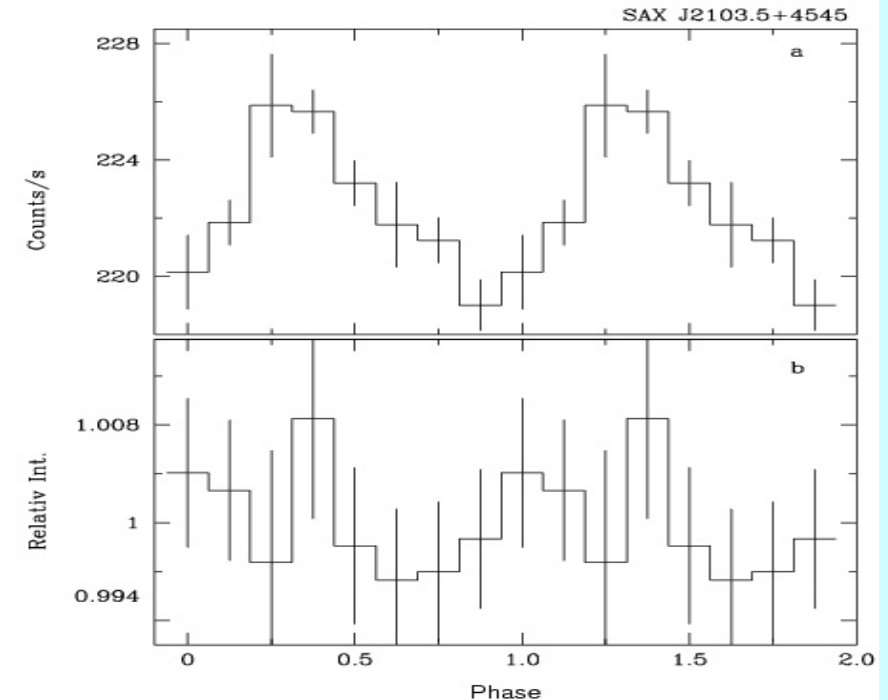
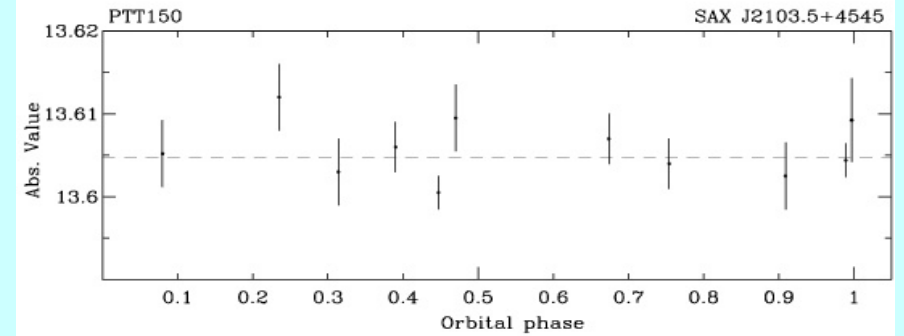
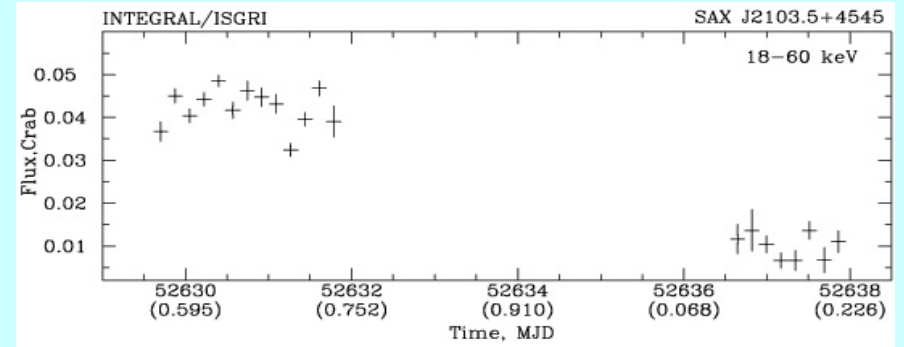
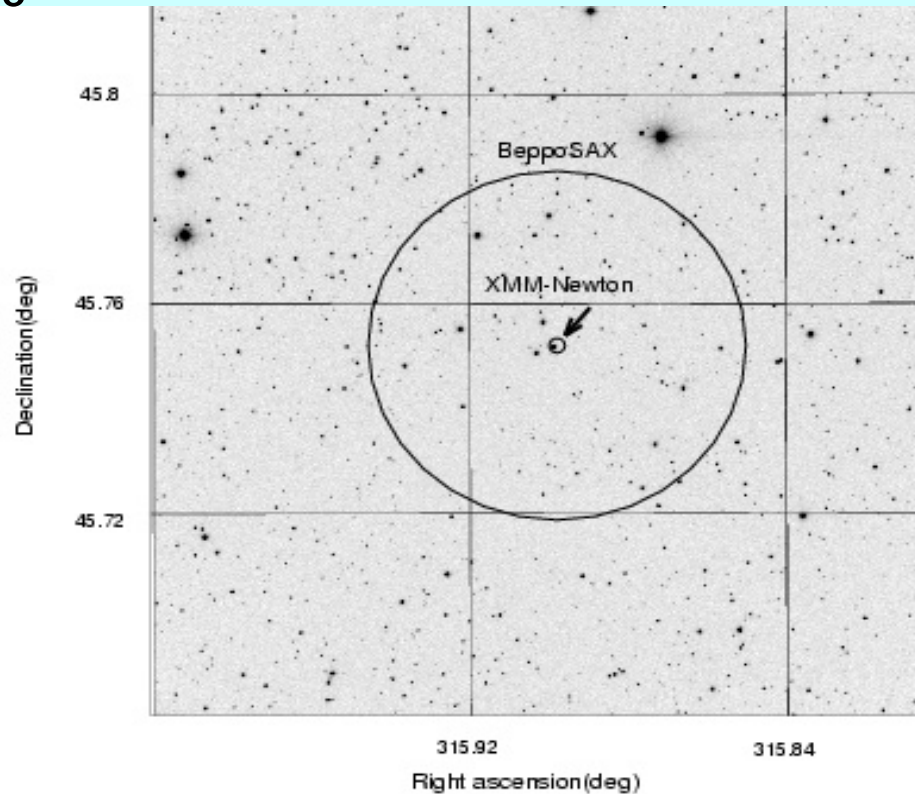
A flux modulation with a period  $\sim 9.725$ d (a possible orbital period).

Strong spectral variations connected with the orbital motion

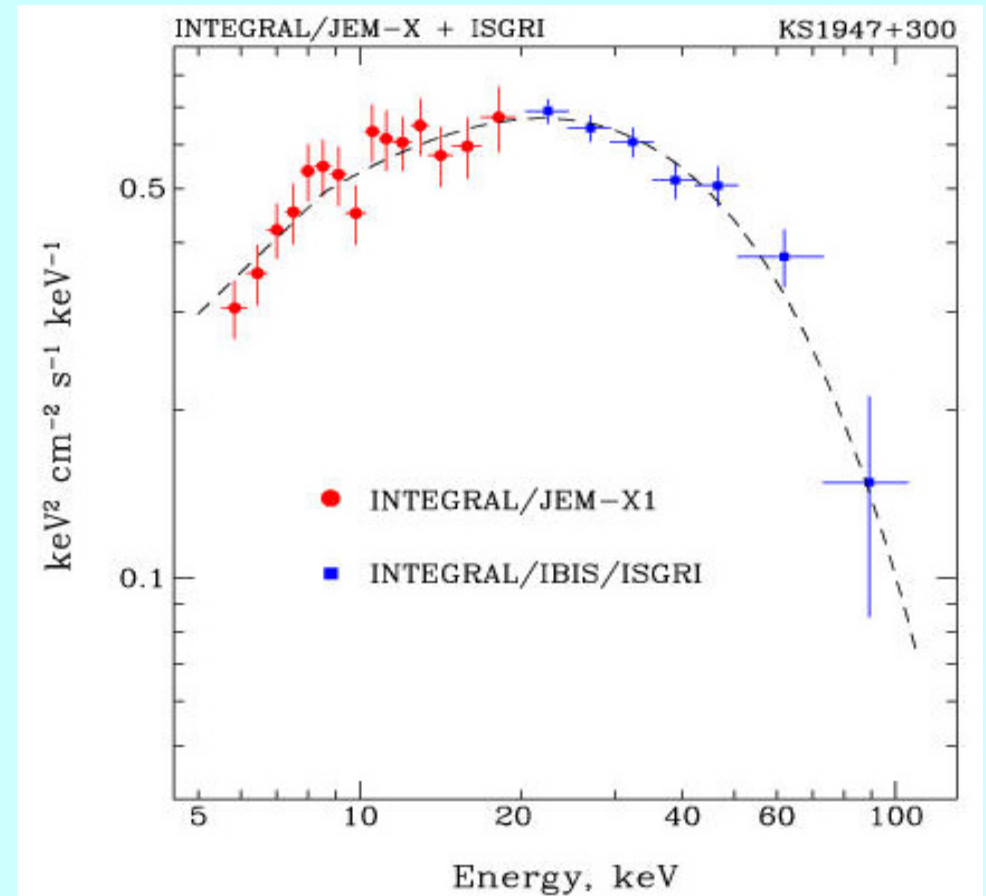
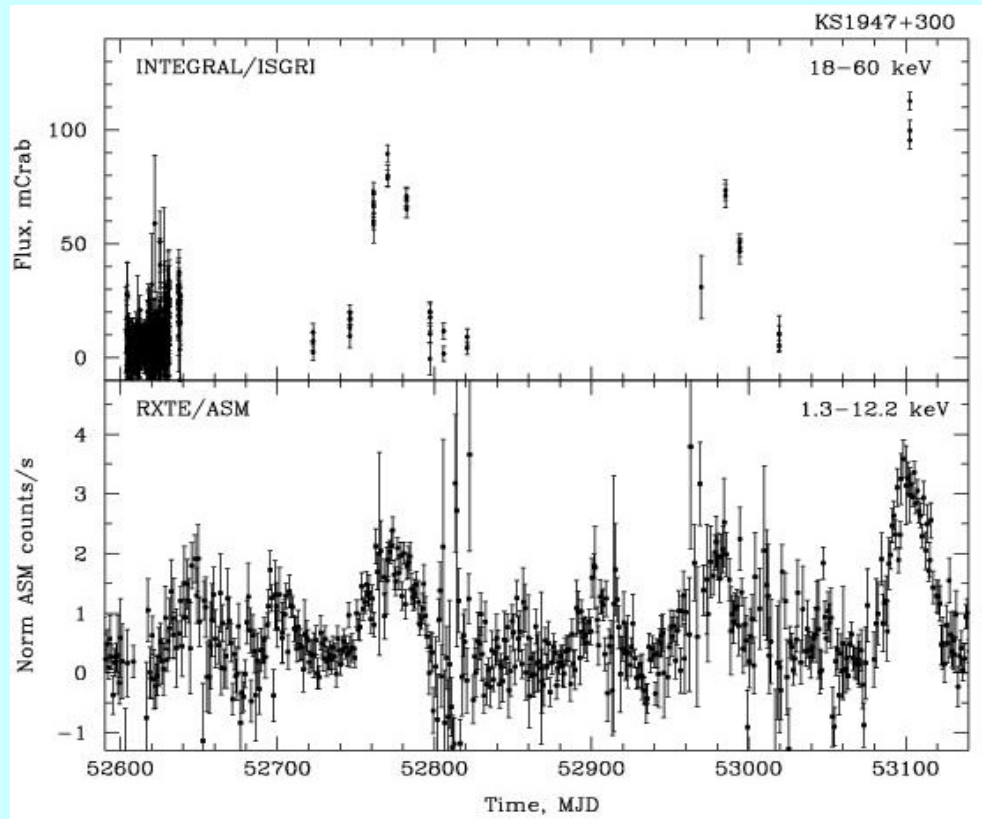


# SAX2103.5+4545

Observations: INTEGRAL(public),  
XMM (public), RTT-150 (optics)  
Localization with an accuracy of  $\sim 5$   
arcsec. No variability in H-alpha and R  
filters on the scales of pulse and orbital  
periods, respectively. An upper limit is  
 $\sim 1\%$

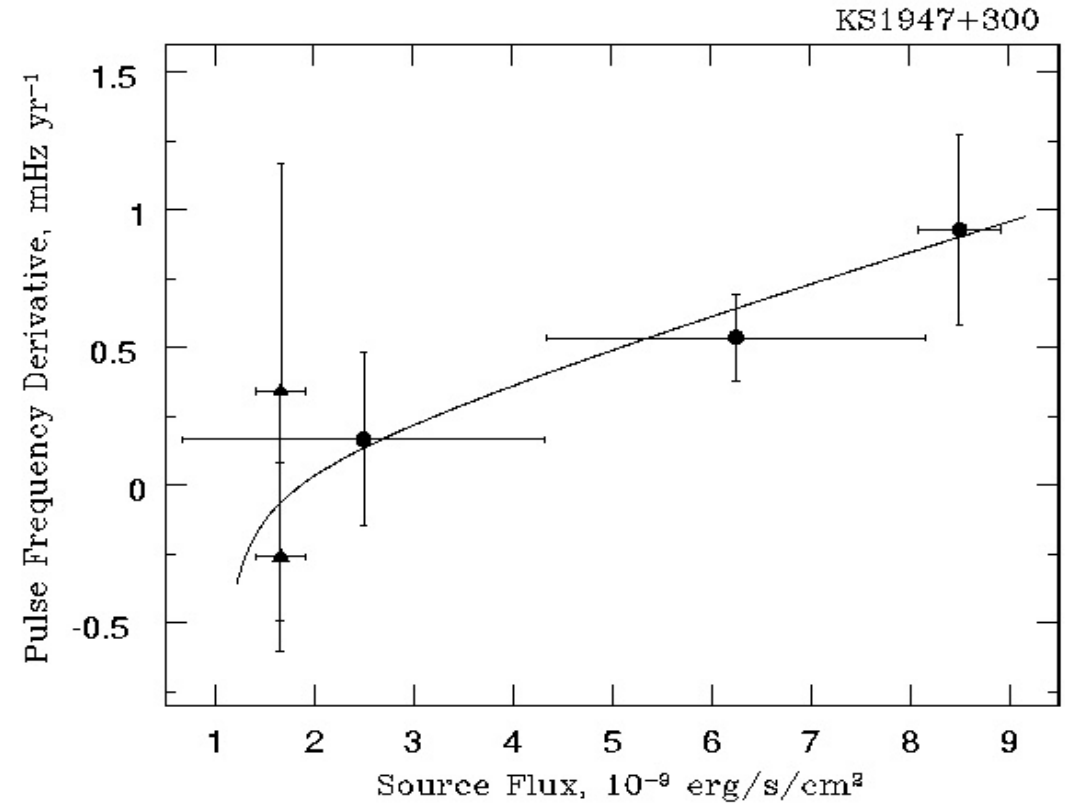
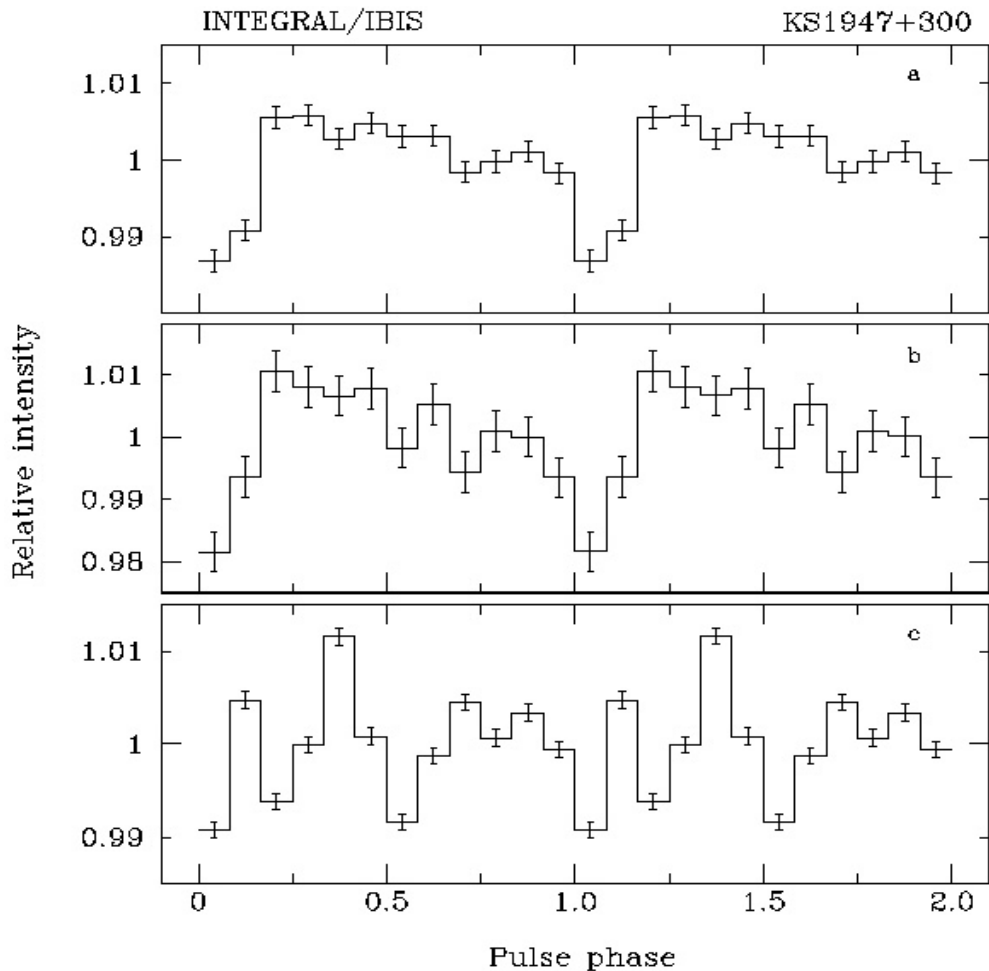


# KS1947+300



INTEGRAL observed several outbursts from the source. Its spectrum can be approximated a powerlaw ( $\sim 1.1$ ) with a high energy cutoff ( $E_c=8.6$  keV,  $E_f=23.6$  keV).

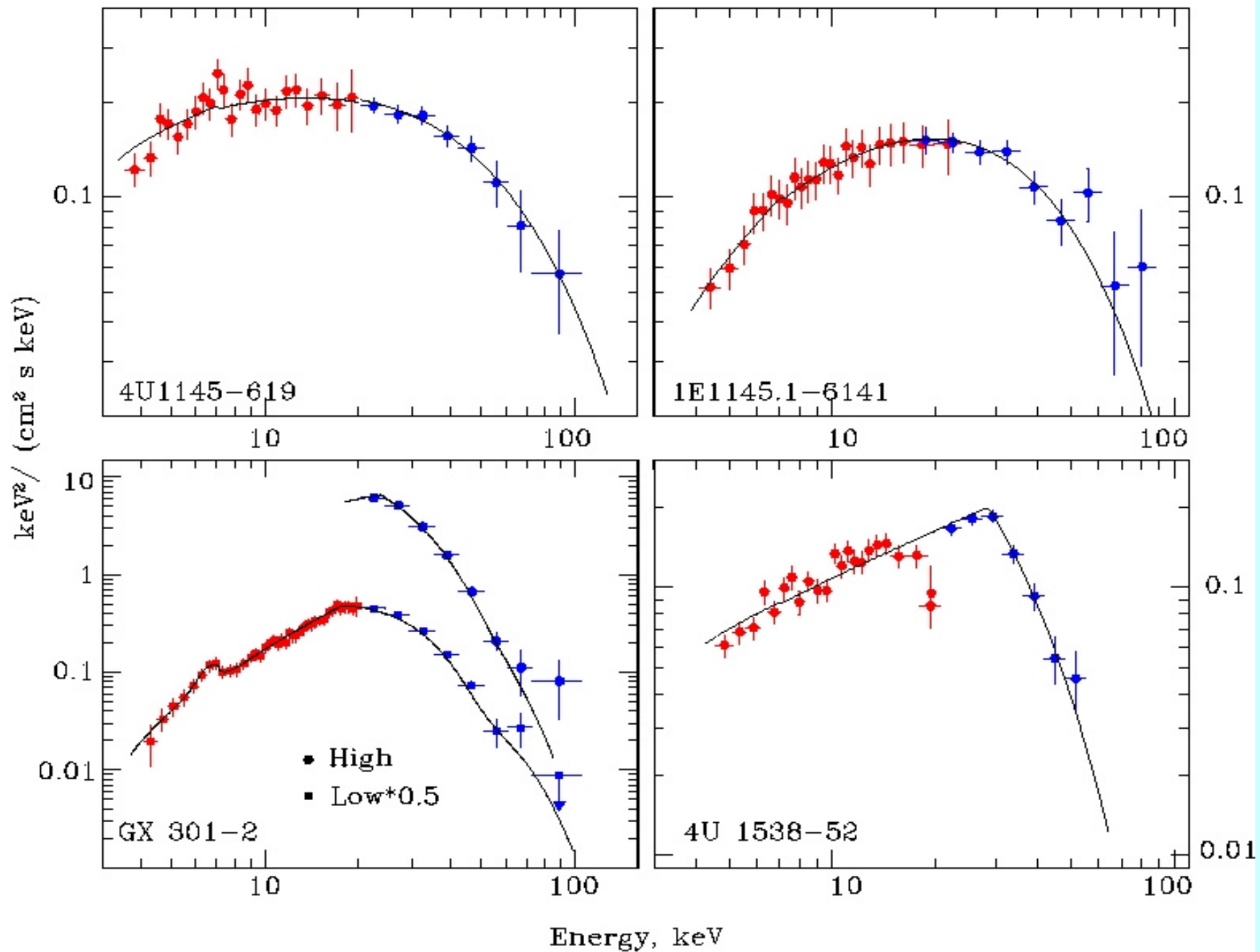
Pulse profile dependence on the source intensity during the outbursts,  $L_{\text{crit}} \sim 10^{37}$  erg/s (Basko, Sunyaev 1976)



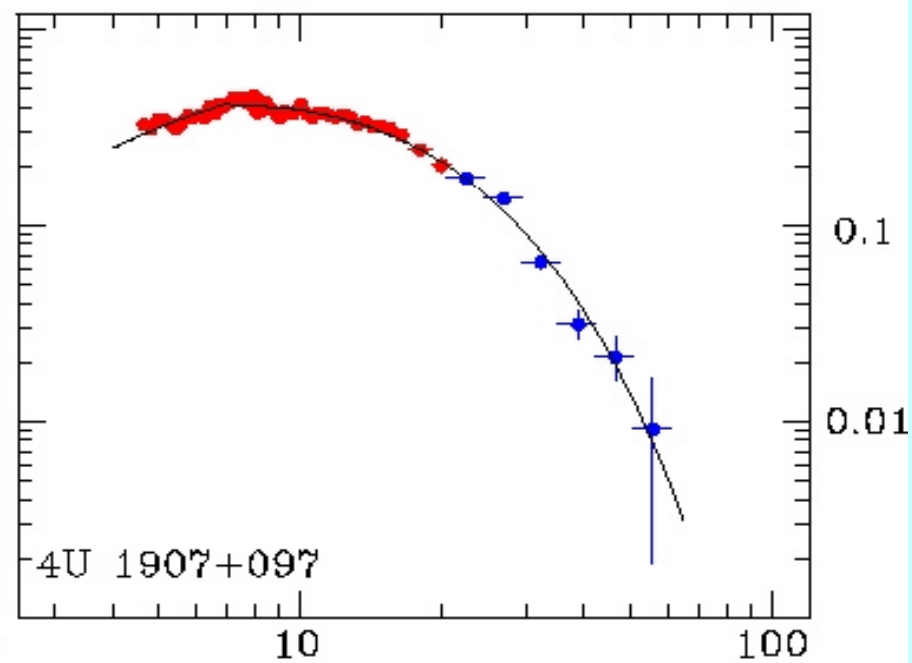
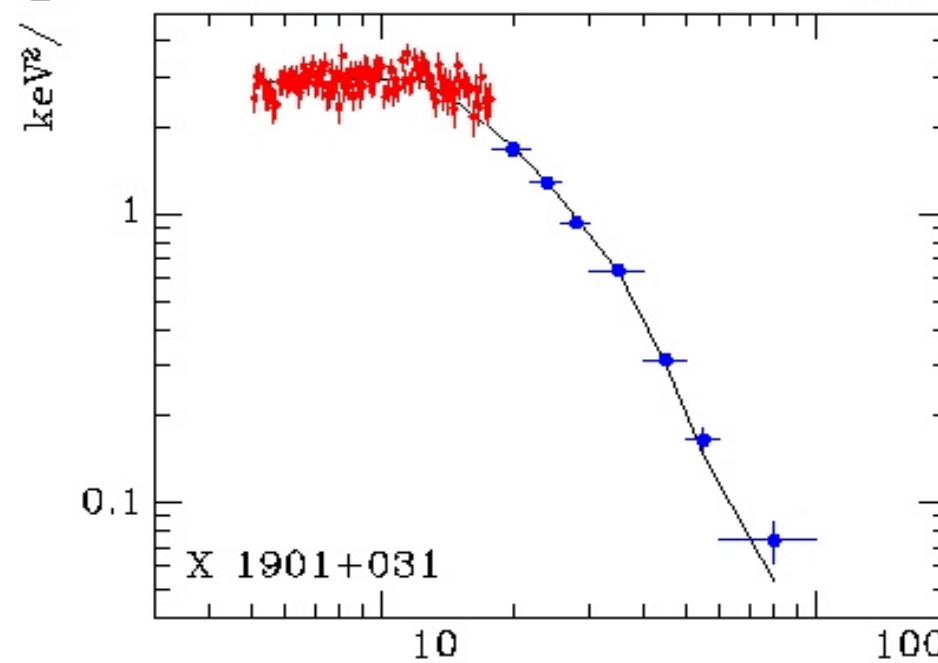
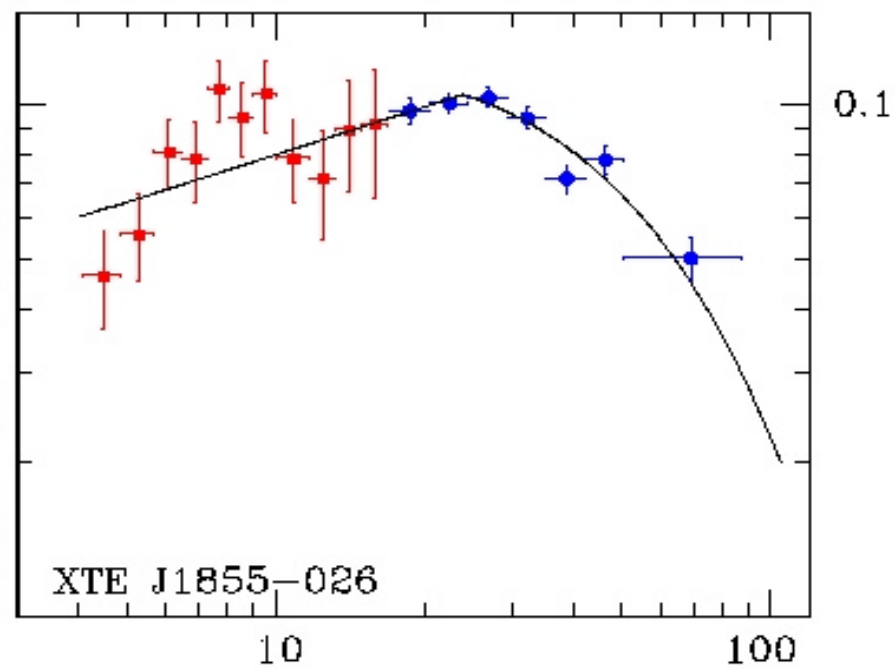
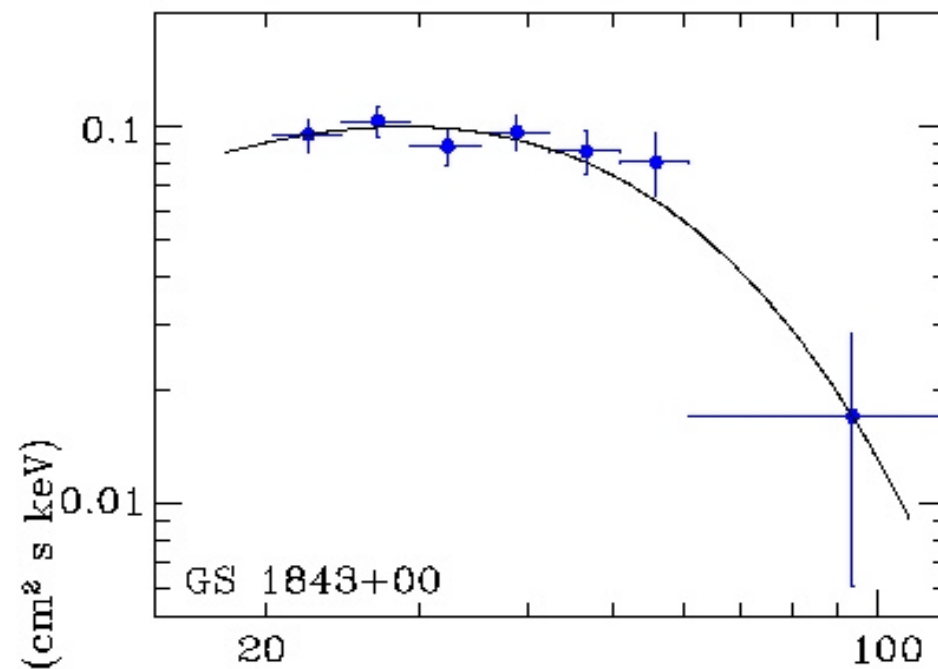
Using RXTE and INTEGRAL measurements and Ghosh & Lamb model (1979) we estimated a distance to the source  $\sim 9.5$  kpc and its magnetic field  $\sim 2 \times 10^{13}$  G

## **Spectroscopy of X-ray pulsars with INTEGRAL**

**More than 30 X-ray pulsars are detected  
with INTEGRAL; about 15 detected both IBIS and  
JEM-X**

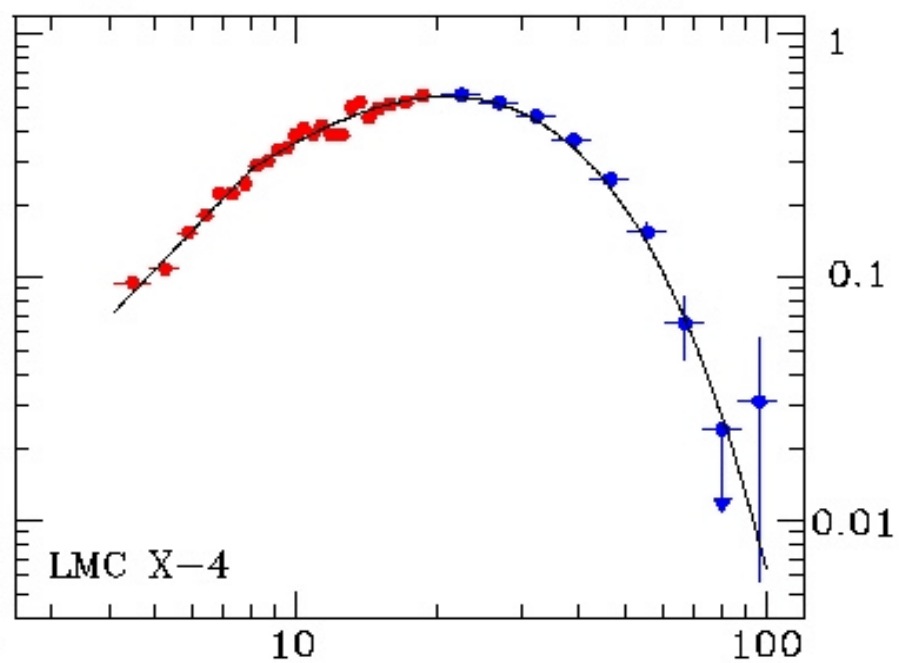
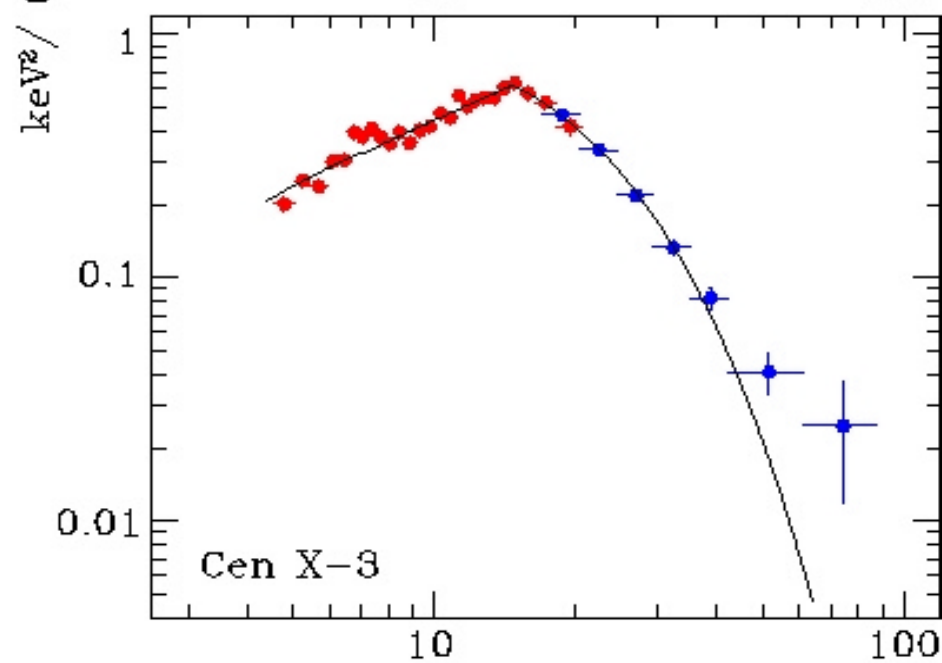
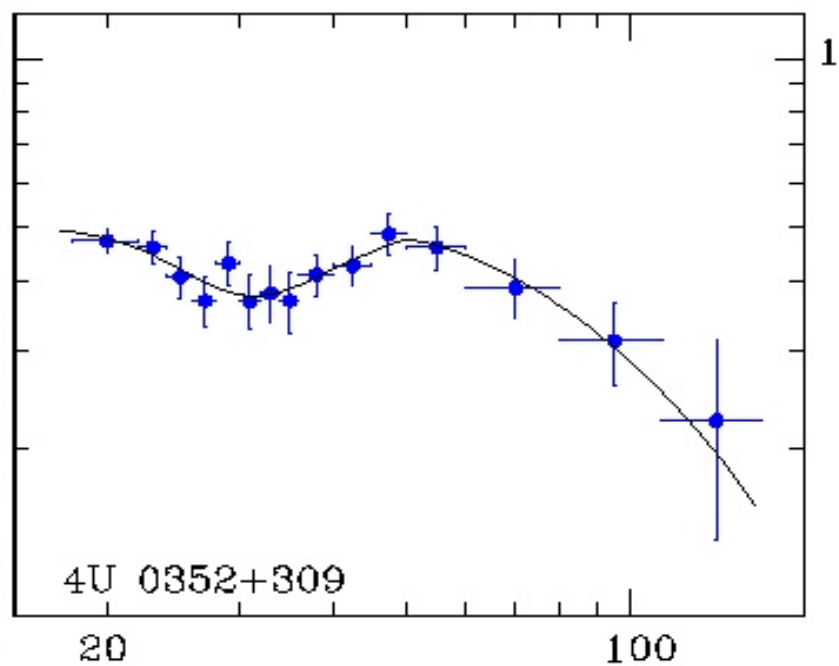
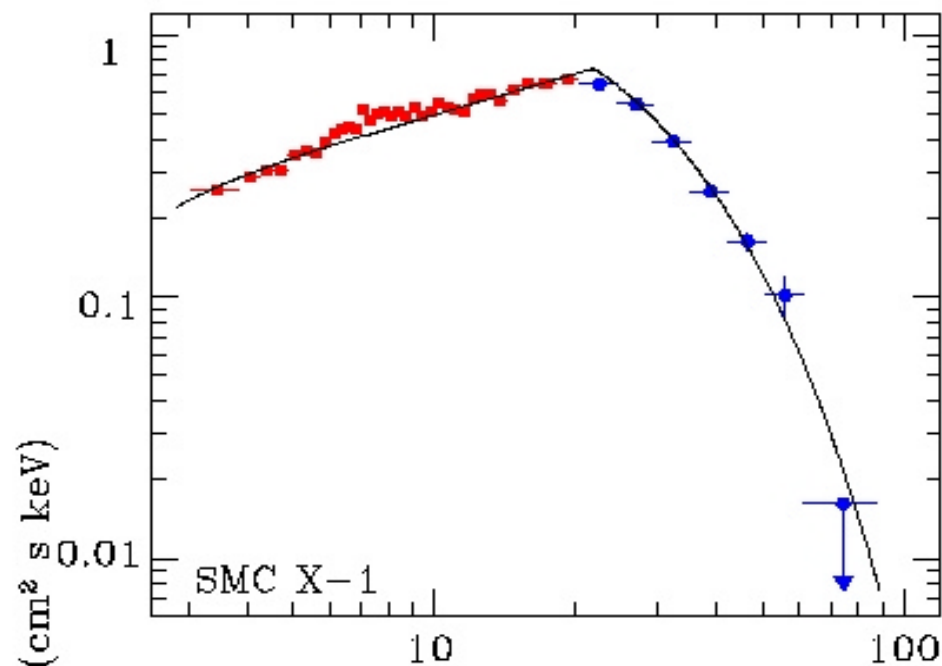




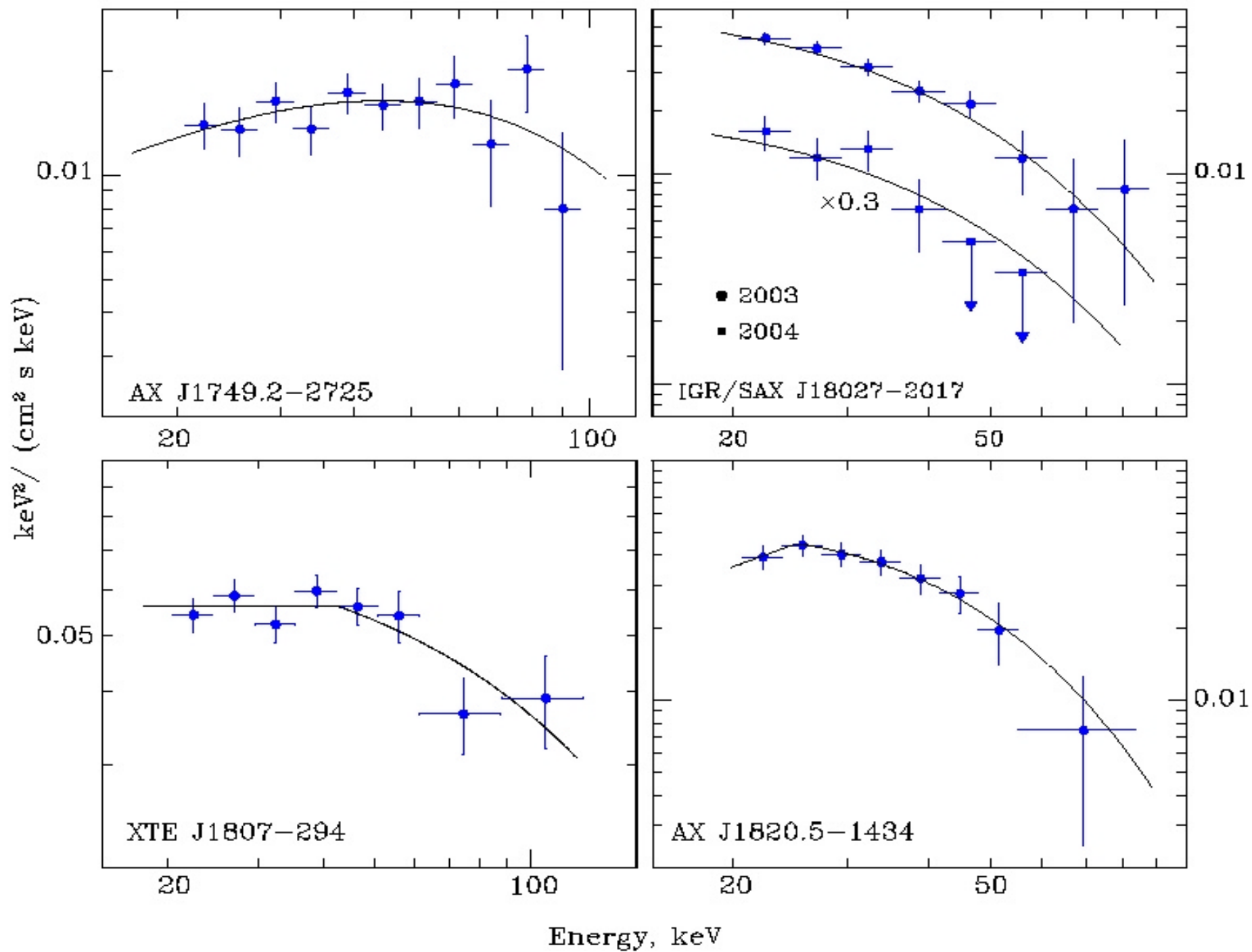


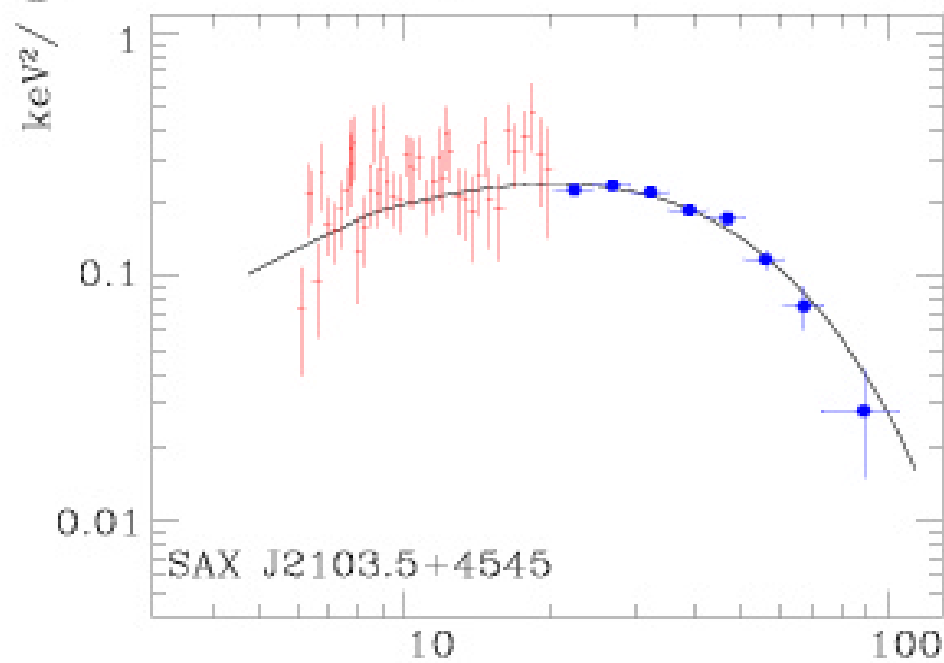
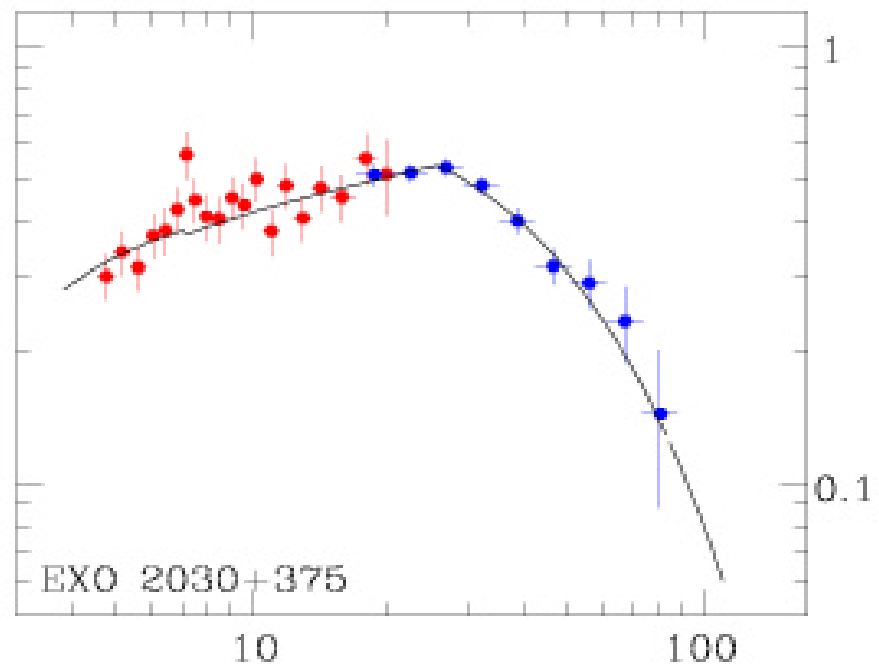
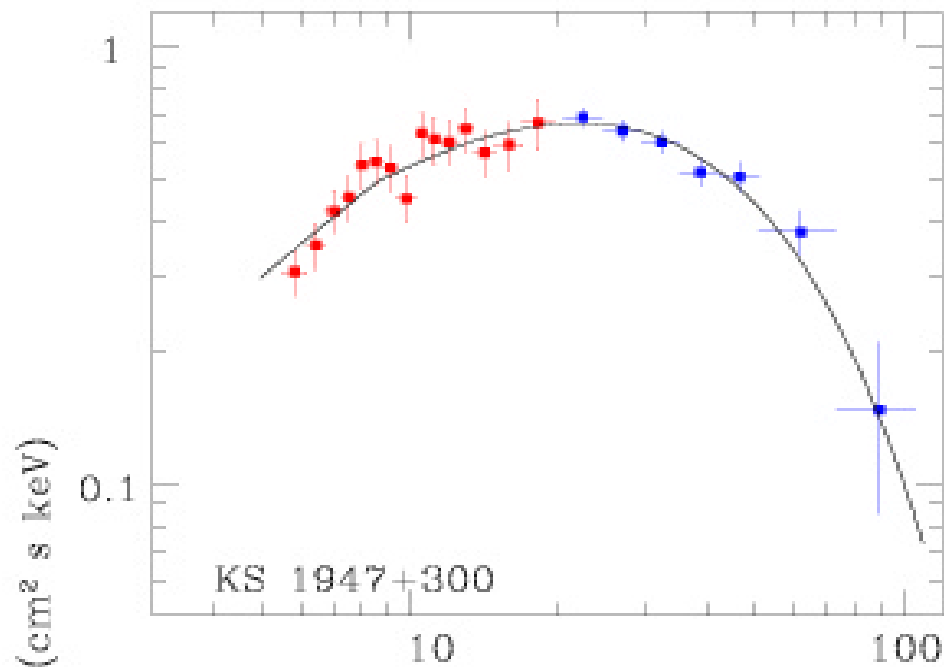
Energy, keV





Energy, keV





Energy, keV

# Publications, connected with CP topics

**Lutovinov et al.** "First results of observations of transient pulsar SAXJ2103.5+4545 with the INTEGRAL observatory.", 2003, *Astron. Lett.*, 29, 803 (topic 5.3.5.2)

**Molkov et al.** "First results from TOO observations of Aql X-1 field", 2003, *A&A*, 411, 357 (topic 5.3.5.3)

**Molkov et al.** "A new outburst from XTE J1858+034. Improving the source position.", 2004, *ATEL* 274 (topic 5.3.5.2)

**Lutovinov et al.** "Variability of X-ray pulsars in a hard energy band observed with INTEGRAL", 2004, *Proceedings of 5th INTEGRAL workshop* (topics 5.3.5.1 and 5.3.5.2)

**Filippova et al.** "Multiwavelength observations of the transient pulsar SAXJ2103.5+4545", 2004, *Astron. Lett.*, 30, 905 (topic 5.3.5.2)

**Tsygankov, Lutovinov** "Observations of transient X-ray pulsar KS1947+300 with INTEGRAL and RXTE observatories", 2005, *Astron. Lett.*, 31, 88 (topic 5.3.5.2)

**Filippova, Tsygankov, Lutovinov** "Spectroscopy of X-ray pulsars with INTEGRAL", 2005, *Astron. Lett.*, 31 (submitted) (topic 5.3.5.1, 5.3.5.2, 5.3.5.3, 5.3.8.1)