

SAX J1810.8-2609 displays increasing hard X-ray activity

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The neutron-star LMXB SAX J1810.8-2609 has been frequently observed by INTEGRAL over the last weeks. After the onset of hard X-ray activity as seen by Swift on Aug. 6-9 (ATel#[1175](#)), and by INTEGRAL on Aug. 19 (ATel#[1185](#)), the source was covered by the Galactic Bulge Monitoring Programme (Kuulkers et al. 2007, A&A 466, 595) and in the INTEGRAL Key Programme of the Galactic Center. The light curve of the last 2 weeks shows a gradual brightening, which peaked on 2007-09-21T06:01 UTC with a source flux of about 83 mCrab and 60 mCrab in the 20-40 keV and 40-80 keV band, respectively. In addition, the JEM-X1 lightcurve shows a type I X-ray burst lasting about 40s on 2007-09-24T19:53:06 with a peak flux of $1.3 \hat{\pm} 0.2$ Crab and $1.1 \hat{\pm} 0.3$ Crab in the 3-10 keV and 10-20 keV band, respectively.

Analysis of IBIS/ISGRI data using INTEGRAL's latest Offline Standard Analysis package OSA 7, shows that the spectrum above 18 keV is best represented by a Comptonization model following Titarchuk 1994 (compTT), rather than by a single power law, except for the short observation on September 21, where a single power law is sufficient. As the compTT model is not well constrained in some cases, we fix the electron seed temperature to $T_0 = 1$ keV in all cases and fit the plasma temperature (kT) which we report below. In addition, we apply a single power law model with photon index Γ in order to give a hint for the spectral slope evolution.

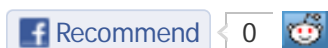
The spectral evolution over the last weeks appears as follows (flux in 10^{-10} erg cm⁻² s⁻¹):

rev.	UT start	exp. time	flux (20-40 keV)	kT [keV]	photo
600	2007-09-12T01:25	185 ks	$2.2 \hat{\pm} 0.3$	32	2.11

601	2007-09-15T01:09	173 ks	$3.5 \hat{\pm} 0.4$	25	2.17
602	2007-09-18T05:01	11 ks	$3.4 \hat{\pm} 0.9$	14	2.1
603	2007-09-21T04:10	12 ks	$6.0 \hat{\pm} 0.5$	56	2.3
604	2007-09-24T00:34	203 ks	$3.6 \hat{\pm} 0.3$	49	2.44

This is the longest lasting and brightest outburst of this source observed so far by INTEGRAL. INTEGRAL continues to observe the Galactic Center region since September 30, 2007.

[Additional material \(images, spectra, and lightcurves\)](#)



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