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X-ray spectral softening of Swift J1753.5-0127

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*on **20 Apr 2012; 17:44 UT***
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Subjects: X-ray, Transient

We report on a pointed Swift observation of the black hole X-ray transient Swift J1753.5-0127. The source was first detected by Swift/BAT on 2005 May 30 (Atel #546; Palmer et al. 2005) and it is has been active since then. This is a rather unusual behaviour for a black-hole transient, since these systems usually undergo weeks-to-months long outbursts. Although a dynamical measure of the mass of the accretor is still missing, the source is suggested to be a black hole candidate based on its timing and spectral properties (Cadolle Bel et al. 2007, ApJ, 659, 649). Despite being active for several years, Swift J1753.5-0127 never left the hard states, although its X-ray spectral hardness has not remained constant (Atel #1599, Krimm et al. 2008; Atel #2341, Negoro et al. 2010). On 2012 April 17, a MAXI alert reported a softening of its X-ray flux, possibly suggesting a hard to soft spectral transition. An inspection of the Swift/BAT light curve seems to confirm the softening, showing a sudden drop of the hard X-ray flux (15-50 keV, http://heasarc.gsfc.nasa.gov/docs/swift/results/transients/SWIFTJ1753.5-0127/). Following the MAXI alert, we asked for pointed Swift observations. Preliminary results from Swift/XRT show that the average count rate of the source is approximately 138 c/s. The spectrum is best fitted with an absorbed disc-blackbody+power law model with a column density NH = 0.34(+/-0.02)e+22cm^-2, a disc-blackbody temperature of 0.40+/-0.01 keV and a power-law photon index 3.34+/-0.07. This is consistent with a black hole in the intermediate states, possibly moving towards the soft state. We obtained an unabsorbed flux (0.6-10 keV) of 6.35e-9 erg cm^2 s^-1. In addition to the X-ray, the UV counterparts was also detected (at the >5-sigma level) using the Swift UV/Optical telescope. The magnitude is uvw2 = 16.88+/-0.03. Follow-up observations at other wavelengths are strongly encouraged. We thank the Swift team for their prompt arrangement of the observation. This work made use of data supplied by the UK Swift Science Data Centre at the University of Leicester.

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