

J117a Suzaku observation of eclipsing source EXO 0748-676 in the LHS

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Low-mass X-ray binaries (LMXBs) viewed from high inclination angles ($i > 60^\circ$) were expected to present stronger Comptonization phenomena compared to average. This hypothesis is based on the possible anisotropy of the Comptonizing coronae, that the coronal shape may flatten towards the accretion disk. One evidence was found in dipping LMXB 4U 1915-05 in the high/soft state (HSS), whose non-dip spectrum exhibited a larger Compton y -parameter compared to normal LMXBs in HSS (Zhang et al. 2014, submitted to PASJ).

In this presentation we will report the results of *Suzaku* observation on 2007 December 25 of dipping and eclipsing source EXO 0748-676 ($i > 80^\circ$) in the low/hard state (LHS). The clean exposure is 22 ksec in the non-dip non-burst period, during which the source keeps a constant bolometric luminosity of $\sim 4 \times 10^{37}$ erg s^{-1} . The persistent broadband spectrum were extracted in 0.6-55 keV, and are successfully interpreted by the “diskbb+nthcomp(bbody)” model. The source was in the LHS with low blackbody temperatures ($kT_{\text{in}} \sim 0.2$ keV and $kT_{\text{bb}} \sim 0.3$ keV). The electron temperature is ~ 12 keV, which is relatively low for hard-state LMXBs. However, the source presented significantly stronger Comptonization than normal LMXBs, with the Compton y -parameter ~ 1.5 and the coronal optical depth ~ 5.4 . Since EXO 0748-676 has extremely high inclination, we have found significant evidence of the corona flattening of a LMXB in LHS. With future study the correlation between the inclination angle and the Comptonization strength of Galactic LMXBs are gradually emerging.