

J117a **Suzaku observations of eclipsing LMXB 2S 0921-630 in the hard state**

Zhongli Zhang, Kazuo Makishima, Soki Sakurai, Ko Ono, Makoto Sasano (The University of Tokyo)

In order to probe the content and geometry of the Comptonizing corona of low-mass X-ray binaries (LMXBs), the high inclination dipping and eclipsing LMXBs were utilized for a comparison with normal LMXBs. Examples include 4U 1915-05 and EXO 0748-676 (Zhang et al. 2014). Another perfect candidate is 2S 0921-630, which was known as an eclipsing LMXB with very high inclination ($i = 82.2^\circ$). It was observed by Suzaku in August 2007 at four phases in one orbit (9 day), with each phase covering ~ 40 ksec exposure and detecting the source up to 30 keV. Within the observed orbit, its HXD-PIN lightcurve kept constant, while its XIS lightcurve varied within 50%. The summed up persistent continuum spectrum can be successfully interpreted by a “diskbb” emission with $kT_{\text{in}} \sim 0.2$ keV and $R_{\text{in}} \sim 50$ km, plus a Comptonized “bbody” emission with $kT_{\text{bb}} \sim 0.4$ keV and $R_{\text{bb}} \sim 6$ -10 km. The source was in the hard state with truncated disk and low blackbody temperatures, which is similar to the Suzaku observation of EXO 0748-676 in the hard state. However, different from EXO 0748-676, we noticed that the spectrum cut off at low energies, yielding a coronal electron temperature only ~ 2 keV, and a large optical depth ~ 15 . This might be an indication of the existence of cool and optically-thick disk corona located in the outer disk, which only affects the X-ray emission significantly from very high inclination angle (Matsuoka et al. 2013). Moreover, significant Fe emission lines were detected in all the four observations, which is rare for LMXBs and reveals more details of its surrounding plasma.