

S01a State Transition of SMBH Accretion Studied with X-ray and UV Monitoring

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Recently, some AGNs have been reported to change their types in months–years between type 1 and 2, in which broad lines plus a strong blue/UV continuum are present and absent, respectively. They are now called “changing-look AGNs (CLAGNs)”. In a CLAGN Mrk 1018, we found that a “soft X-ray excess” which is a spectral upturn toward lower energies below ~ 1 keV (Noda et al. 2011; 2013; Petrucci et al. 2018) disappeared along with the broad lines and UV continuum when the source changed from type 1 to 2, and suggested that the SED change corresponds to the soft-to-hard state transition of Galactic X-ray binaries (Noda & Done 2018).

We next focused a bright Seyfert NGC 6814, which was monitored by *Swift* at its faint phase with $L/L_{\text{Edd}} \sim 0.3\%$ in 2012 and its bright phase with $L/L_{\text{Edd}} \sim 2\%$ in 2016 (Noda et al. 2017 ASJ fall S21a). In the XRT and UVOT spectra, a strong soft X-ray excess can be confirmed with a strong UV continuum only at the bright phase. With detailed spectral fits, we successfully found that the faint-phase SED is explained by only a disk black body and a hot Comptonization continuum, while the bright phase requires a strong warm Comptonization with $kT_e \sim 0.15$ keV and $\tau \sim 20$ in addition, to explain both soft X-ray excess and UV continuum. The SED variations are similar to those of CLAGNs, and probably correspond to the hard-to-soft state transition of the Galactic X-ray binaries. Furthermore, we found that warm absorbers appeared at the bright phase, making the X-ray–UV correlation weaker. In this talk, we introduce these results, and discuss the state transition of SMBH accretion flows in terms of SED changes and X-ray, UV, and optical flux variability.