

Soft X-ray excess emission in NLS1 galaxies

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A long-standing puzzle of the origin of soft X-ray excess in Seyfert 1 galaxies remains a focus in the research area of active galactic nuclei. That this was considered the origin of soft excess could be thermal emission from the inner accretion disk. This component has been explained with a temperature 0.1-0.3 keV range of the masses $10^{6-9} M_{\odot}$ of supermassive black hole and a range of accretion rates. Such a hot disk is not expected in these AGNs and rarely it can attain the temperature of about 100 eV for low mass and high accretion rate. We tested other two competing possibilities—blurred reflection from partially ionized accretion disk and the cool Comptonization of seed photons from the accretion disk. We applied these two models using XMM-Newton and NuSTAR observations of two NLS1 Mrk 766 and II Zw 177. What we found that both models describe equally good to the broadband spectrum for both AGNs. Time resolved spectroscopy sheds some light on the origin and likely related to the blurred reflection when geometry (size or height) of the X-ray corona changes.

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