

X-RAY SPECTRAL PROPERTIES OF NARROW-LINE SEYFERT 1 GALAXIES IN THE 6DFGS

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Narrow-line Seyfert 1 galaxies (NLS1s) are a peculiar member in the active galactic nuclei (AGN) family. They exhibit a fast variability as expected for the small black hole mass and high accretion rate. In the soft X-ray band, NLS1s show strong soft X-ray excesses above the prediction of a single power-law, while in the hard X-ray band, they have steeper intrinsic spectra than BLS1s. Some fraction of NLS1s showing strong spectral variability below 2 keV and evident features around Fe K-shell at 6-8 keV, are classified as complex NLS1s (C-NLS1s), while the others are described as simple NLS1s (S-NLS1s), whose 2-10 keV spectra do not strongly deviate from a single power-law continuum. The difference between simple and complex NLS1s might be related to the X-ray flux state or the presence of the disk wind.

We present a detailed study of 11 NLS1s from the Six-degree Field Galaxy Survey (6dFGS) with the *XMM-Newton* public data, and fit the X-ray spectra with a uniform analysis. These objects have new optical spectroscopy observations by the Las Campanas Observatory (LCO) in Chile. There are four C-NLS1s and four S-NLS1s. The others seem to be intermediate type objects filled the gap between C-NLS1s and S-NLS1s, which show absorption but variability. Our results support the view that the wind from the inner accretion disk is commonly existing in the NLS1s with high accretion rate. The X-ray spectral complexity and variability in C-NLS1s are due to the cool clumps in the slow wind. On the contrary, the wind in S-NLS1s is fast, the cool clumps and even the low ionization material could be blown away, thereby resulting in the X-ray spectral simplicity.