Z212r   XRISM Observations of Active Galactic Nuclei in Performance Verification Phase

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X-ray observation of Active Galactic Nuclei (AGNs) is one of the most powerful methods to probe the vicinity of Super-Massive Black Holes (SMBHs). In an AGN, a primary X-ray continuum is produced in a corona formed near an SMBH, and it is reprocessed by surrounding regions, causing various fine X-ray spectral features. Precise X-ray spectroscopy on such fine features with an X-ray microcalorimeter will open a new window on many important topics in AGN studies, e.g., structures of accretion disks, broad-line regions, and dusty tori, physical conditions of ionized absorbers and disk winds including ultra-fast outflows, and the relation between AGNs and their host galaxies.

The X-Ray Imaging and Spectroscopy Mission (XRISM) was successfully launched on September 7, 2023. In orbit, Resolve achieves the high energy resolution of $\Delta E/E \lesssim 5$ eV/6 keV with the X-ray Mirror Assembly (XMA) and the X-ray microcalorimeter, whereas Xtend realizes the wide field of view of $38' \times 38'$ in the $0.4 - 12$ keV range with the XMA and the X-ray CCD. Although Resolve observations are limited to $1.7-12$ keV with its gate valve still closed, we have finished the commissioning phase, and are now proceeding with Performance Verification (PV) observations on various targets including AGNs. In this presentation, I will overview our observational strategies and XRISM observations on AGNs during the PV phase. Subsequently, I will introduce some initial results of the bright Seyfert galaxy NGC 4151, focusing on the narrow Fe-K fluorescence lines and the Fe XXV/XXVI absorption lines with Resolve and a broadband X-ray spectrum with Xtend.