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Dust-to-gas ratio in a complete sample of type-1 AGN.

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Abstract

According to the Unified Model of Active Galactic Nuclei (AGN), unobscured AGN based on its optical spectrum (detection of rest-frame UV-optical broad emission lines, type-1 AGN) should appear as X-ray unabsorbed AGN. However, there is an important fraction (10-30%) of AGN whose optical and X-ray classifications do not match, and the origin of the discrepancy is not clear. To provide insight into this topic, we have conducted a statistical analysis of the optical obscuration and X-ray absorption properties of the optically type-1 AGN from the Bright Ultra-hard XMM-Newton Survey (BUXS) with $L_{2-10keV}$ $>10^{42}$ erg s^{-1} and z=0.05-1. We have high-quality spectra from XMM-Newton and either SDSS spectra or proprietary observations for the selected sample. In order to provide the most complete sample as possible, we have conducted a detailed analysis of the emission lines to provide a reliable classification of the AGNs. We derive the X-ray absorption by fitting their XMM-Newton spectra and the optical extinction using UV/optical spectral continuum fits. As BUXS is a flux limited X-ray selected sample at hard energies ($f_{4.510keV}$ $\leq 6\times10^{-14}$ erg s^{-1} cm^{-2}), it is complete for N_H column densities up to the Compton-thick limit ($\sim10^{24}$ cm^{-2}). Our preliminary results show that most type-1 AGN in our sample show consistent optical and X-ray classification, but there is a large fraction (20%) of objects with large N_H column densities (N_H $>4\times1021$ cm^{-2}). (See poster).