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# The intrinsic fraction of type 2 AGN

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Most AGN studies find that the obscured AGN fraction decreases as the luminosity increases. This is usually explained by invoking receding torus models. However, recent results for the intrinsic type 2 fraction based on a complete hard X-ray selected sample (BUXS: Bright Ultrahard XMM-Newton Survey) showed little to no luminosity dependence, and uncovered a population of hidden luminous Compton-thick AGN. We furthered this analysis by applying a fully Bayesian approach to derive the distribution of column densities ($N_H$) for the 252 AGN with spectroscopic redshifts within BUXS. For a sub-sample of type 1 AGN at $z = 0.05 - 1$, we compared these results to the ones obtained for the optical obscuration. We fitted the optical spectra to classify the sources in types (1.0-1.9), based on emission line ratios, and to measure the optical-UV continuum obscuration ($A_V$). We find that there is a clear tendency towards increasing $A_V$ and $N_H$ from 1.0 to 1.9 objects, with a statistically significant difference between the 1.0-1.2-1.5 and 1.8-1.9 subsets, showing that they are different families. Regarding the dust-to-gas ratio ($A_V$ vs. $N_H$) we do not find a clear tendency, instead the distribution shows a large scatter. We have also explored the suitability of the ratio of the broad H$\alpha$ and H$\beta$ emission lines to estimate the obscuration in type 1 AGN, finding average values similar to previous ones but with substantial dispersion, concluding that this ratio should be taken with extreme caution, if not discarded as an obscuration measurement altogether.

## Topic

Active Galactic Nuclei: accretion physics and evolution across cosmic time

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