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Reflection from AGN disks and surroundings, Unification and the CXB

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Compton thick (CT) AGN are predicted by unified models, which attribute most of the AGN diversity to their inclination, and play an important role for the understanding of the growth of black holes in the early Universe. The fraction of CT AGN at low redshift can be derived from the observed CXB spectrum assuming AGN spectral templates and luminosity functions. We show that high signal-to-noise average hard X-ray spectra, derived from Swift/BAT and NuSTAR, imply that mildly obscured Compton thin AGN feature a strong reflection and contribute massively to the CXB. Thus, a population of CT AGN larger than that effectively detected is not required. The strong reflection observed in mildly obscured AGN, even in individual NuSTAR observations, suggests that the covering fraction of the gas and dust surrounding their central engines is a key factor in shaping their appearance. In addition, NuSTAR observations of AGN show clearly that the reflection behavior varies with the obscuration. The disk is found to be the main reflector in unobscured sources. Instead, obscured objects feature a correlation between reflection and column density, a characteristic of a clumpy reprocessing region located far away.

Topic

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