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The Distribution of Absorbing Column Densities among Seyfert 2 Galaxies

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Abstract

We use hard X-ray data for an "optimal" sample of Seyfert 2 galaxies to derive the distribution of the gaseous absorbing column densities among obscured active nuclei in the local universe. Of all Seyfert 2 galaxies in the sample, 75% are heavily obscured ($N_H > 10^{23}$ cm^{-2}), and about half are Compton thick ($N_H > 10^{24}$ cm^{-2}). Intermediate type 1.8-1.9 Seyfert galaxies are characterized by an average N_H much lower than "strict" Seyfert 2 galaxies. No correlation is found between N_H and the intrinsic luminosity of the nuclear source. This N_H distribution has important consequences for the synthesis of the cosmic X-ray background. In addition, the large fraction of Compton-thick objects implies that most of the obscuring gas is located within a radius of a few 10 pc from the nucleus.

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