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AGN radiative feedback: the effective Eddington limit for dusty gas

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AGN radiative feedback, driven by radiation pressure on dust, is a key physical mechanism connecting the accreting black hole to its surrounding environment. The actual importance of radiative feedback can be observationally tested by analysing how X-ray-selected AGN samples populate the so-called "NH-lambda plane", defined by the column density versus the Eddington ratio. A "forbidden" region occurs in this plane, where obscuring clouds cannot be long-lived, and should be outflowing. We show how the inclusion of radiation trapping leads to an enhanced forbidden region, such that even Compton-thick material can potentially be disrupted by sub-Eddington luminosities. Comparing our model results to the most complete sample of local AGNs with measured X-ray properties, we obtain a nice agreement. In addition, by properly including radiation trapping, we can account for the dynamics and energetics of AGN-driven outflows observed on galactic scales. I will discuss how such radiative feedback may regulate both the AGN obscuration and outflow properties in the context of black hole-host galaxy co-evolution.

Topic

Active Galactic Nuclei: accretion physics and evolution across cosmic time

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