

Dusty Active Galactic Nuclei from the Nearby Universe to Cosmic Dawn: The Evolving Picture and New Insights in the JWST era

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Dust is a defining component of the active galactic nucleus (AGN) phenomenon, obscuring the accreting supermassive black hole and reprocessing its UV-optical emission into the infrared, where it provides a powerful probe of the structure and physical properties of the obscuring material. Decades of infrared observations from ground- and space-based facilities have established a broad observational framework for understanding dusty AGN through resolved morphology, spectral energy distributions, variability, and spectroscopic diagnostics across a wide range of luminosities and redshifts. Nevertheless, key questions remain regarding the nature of the obscuring structures, the interplay between nuclear and larger-scale dust, and the most deeply buried phases of black hole growth. In this talk, I will review the evolving observational picture of dusty AGN from the local universe to cosmic dawn, focusing on what we have learned about AGN dusty structures and their physical properties. I will also discuss selected new developments from the JWST era, including refined constraints on AGN dust properties, the identification of heavily obscured AGN at high redshift, and the discovery of Little Red Dots in the early universe that may represent extreme environments of rapid black hole growth.