

Probing the cold interstellar medium and star formation in the quasar host galaxies at the earliest epoch

Thursday 21 November 2024 09:00 (30 minutes)

Quasars discovered at the highest redshift provide a unique opportunity to study the early growth of the first supermassive black holes (SMBHs) and their host galaxies at the reionization epoch. Extensive observations were conducted out using large submillimeter/millimeter/radio telescopes and interferometer arrays to investigate the dust continuum, molecular CO, and fine structure line emission from the young quasar host galaxies at $z > 6$. The results reveal active star formation in the central few kpc region of the quasar host galaxies with highly excited molecular gas. In this talk, I would like to review the observational constraints on star formation, gas excitation, and gas kinematics in these young quasar host galaxies, and discuss our understanding of the co-evolution of these SMBH-galaxy systems at the earliest epoch.

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