

Illuminating the Dark Ages: Quasars in the Epoch of Reionisation

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Abstract

Quasars are the brightest (non-transient) objects observed at the highest redshifts, $z > 7$. Such high redshift quasars are important as detailed analysis of quasar spectra provides unique information about the baryonic and physical condition of the Universe during the epoch of reionisation. Furthermore, the density of high redshift quasars puts powerful constraints on the mechanisms that are required to seed and grow $>10^9 M_{\text{sun}}$ supermassive black holes less than a Gyr after the Big Bang. Because these quasars are rare, surveys covering large areas on the sky are required to discover such objects. In this talk I will describe the results of our on-going programme aimed at discovering quasars at the highest redshifts ($z > 6.5$) in various large optical and near-infrared surveys. I will present the results of our successful search and of our multi-wavelength follow-up observations, including ALMA observations of dust and gas in the quasar host galaxies. Lastly, I will discuss the implications of our findings for models of massive galaxy and black hole formation at high redshift.