

Title: Environments of $z=2-3$ radio-loud AGN

Powerful radio-loud quasars and radio galaxies are known to be hosted by massive ellipticals with central supermassive black holes. If the mass of the black hole scales with the depth of the potential well, high redshift radio-loud quasars and radio galaxies are good tracers of deep potential wells in the early Universe. This suggests that radio-loud AGN can be used as tracers of high-density environment at early epochs.

In order to study the host galaxies and environments of $z\sim 2-3$ AGN, we have observed a set of 40 quasars using both high-resolution near-infrared imaging with the NIRC on the Keck-I telescope and wide-field $\$R\$$ and $\$K\$$ imaging with the Palomar 200-inch telescope. The sample quasars are nearly evenly divided between radio-loud and radio-quiet systems with comparable V-band magnitudes and redshifts, and this survey provides the deepest and highest resolution images of a large sample of quasars at cosmologically significant epochs yet assembled. The NIRC K-band images typically reach limits of $K\sim 22-23$, whereas the Palomar K-band data are shallower with a magnitude limit of ~ 20.5 . The R-band data reach down to $R\sim 25$.

Here, we will present results on the galactic environment of 12 of the radio-loud quasars. We will discuss the distribution of galaxies in the fields and their number densities. Utilizing both R and K data, as well as J-band images of a few fields, we also report on the colour distribution of the galaxies and the occurrence of Extremely Red Objects (EROs).

Collaborators:

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