

Contributed Talk

Splinter AGN

GALAXY OVERDENSITIES AROUND 3C RADIO GALAXIES AND
QUASARS AT $1 < z < 2.5$ REVEALED BY *Spitzer* 3.6 / 4.5 μM AND
PAN-STARRS

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Luminous radio sources are thought to reside in galaxy clusters or proto-clusters. To confirm this idea, it is necessary to identify possible companion galaxies around RGs at the same redshift. Taking the advantage of the impressive and complete sample of 64 high-redshift 3C sources at $1 < z < 2.5$ which has been mapped by the *Spitzer Space Telescope*. The IRAC 3.6 μm and 4.5 μm 5- σ detection limit of 4 μJy (22.4 AB mag) allows us to search for the brightest candidate cluster member galaxies associated with the 3C sources. To remove the contamination of foreground stars and galaxies along the lines of sight toward the 3C sources we apply color cuts: removed sources satisfy either the IRAC1/2 cut $[3.6] - [4.5] < -0.3$ or the Pan-STARRS/IRAC cut $i - [4.5] < 0.5$ if detected by Pan-STARRS. For both selection methods, about half of the 3C radio sources show significant overdensities ($> 3\sigma$) within 30'' (~ 250 kpc) projected distance from the radio source compared to the surrounding galaxy densities measured in the 50''–120'' annulus. The Pan-STARRS/IRAC cut reveals higher average overdensities than the IRAC1/2 cut. To infer the nature of the cluster members, we rerun the analysis using a stronger IRAC1/2 cut $[3.6] - [4.5] < -0.1$ which removes $1 < z < 1.4$ passive ellipticals but not star-forming galaxies. For the strong cut, the overdensities, on average, completely disappear at $1 < z < 1.4$. We therefore suggest that the 4.5 μm detected cluster member galaxies are mainly passive ellipticals.