

Chasing Radio Galaxies Across the Universe

The jets of active galactic nuclei (AGN) can produce spectacular structures in the radio wavelengths known as a radio galaxy. The morphology and characteristics of the jets of a radio galaxy can be used as a diagnostic to understand the physics occurring within and surrounding it. In this talk, I will first present the results of several investigations of the interplay between radio AGN and their environment that use infrared (Spitzer), optical (Pan-STARRS), and radio observations (VLA, LOFAR) of AGN in massive galaxy clusters at $z \sim 1$. Then, I will present a multi-wavelength study of the radio galaxy population in the galaxy cluster MOO J1507+5137, which has exceptional radio activity among the massive galaxy population. The data are suggestive that during the cluster-cluster merger phase radio activity can be dramatically enhanced. Lastly, using the radio morphology and excitation state of radio galaxies, I explore the possibility of AGN having spectral states analogous to those of X-ray binaries (XRBs) and find that different classes of radio-loud AGN occupy distinct areas of the state diagram with broad similarities to XRBs.