

Title

Evolution of radio tails in galaxy groups: a pilot investigation

Abstract

The long-term energy injection history of radio galaxies depends on the interplay of jet power and environment. MeerKAT and LOFAR are revealing the intricate structures that arise from long-timescale active galactic nucleus (AGN) activity in rich cluster environments. However, the vast majority of radio galaxies inhabit group-scale environments, and so understanding how radio lobes and tails evolve over long timescales in galaxy groups is crucial for assessing AGN energy injection histories in the local Universe. We propose deep MeerKAT L- and S-band observations of NGC1044, an archetypal tailed FRI radio galaxy in a well-studied galaxy group, with the aims of: (a) obtaining the most sensitive high-resolution maps of its structure to date (including newly detected group-scale low-frequency emission), (b) making well-resolved spectral index maps out to scales of >200 kpc within the group environment, and (c) carrying out in-depth modelling of the jet and tail evolution to determine their physical conditions and energy injection history.