

# Solving the mysteries of the radio emissions in Abell 1367

## Abstract

There is clear evidence that radio relics are related to large cluster merger shocks, however the electron acceleration mechanism is not well understood, in particular, if seed electrons are crucial to enhance the acceleration efficiency. The merging galaxy cluster Abell 1367 hosts several spectacular radio sources, especially a large relic to the north-west, the bright, tailed radio galaxy 3C264, and three spiral galaxies with tails of stripped gas. Remarkably, the long tails of the spiral galaxies coincides with the diffuse emission. This nearby cluster could be the first example where spiral galaxies demonstrably provide seed electrons boosting the relic radio emission.

This proposal aims for answering several questions arising from the radio sources in Abell 1367. MeerKAT is the only interferometer, which may recover the flux of extended diffuse emission in this nearby cluster. The proposed observations will provide high resolution maps of the radio surface brightness, the spectral index, the polarisation and in combination with deep LOFAR observations of the curvature. These information will allow (i) to answer if the tails of the spiral galaxies provide seed electrons for the diffuse emission, (ii) to confirm or disconfirm the classification of the diffuse emission as radio relic, (iii) to study the cooling and re-energisation of the relativistic electrons in the tails of the spiral galaxies, and (iv) into how magnetic fields are stretched and twisted in ICM by galaxy motions.

To achieve the scientific goals, we request a total of 12 hours observation (including overheads) MeerKAT time in L-band.