

Revealing remarkable emission in Abell 1367 with LOFAR and MeerKAT)

Monday, 6 May 2024 17:15 (2 minutes)

Galaxy cluster mergers are the most energetic events dissipating a significant portion of the energy in the ICM through shocks. 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, whether mildly relativistic electrons exist in the intracluster medium (ICM) and if they are essential to explain the phenomenon of radio relics. The merging galaxy cluster Abell 1367 hosts several spectacular radio sources, especially a large scale extended diffuse radio emission to the north-west, which has, so far, been classified as a candidate radio relic, the bright tailed radio galaxy 3C264, and three infalling spiral galaxies with tails of stripped interstellar medium. We present our recent MeerKAT observations of the merging galaxy cluster A1367 at 1.3 GHz, complemented with results from our LOFAR HBA analysis that confirms the extended emission and allows, for the first time, to constrain its morphological and spectral properties. Remarkably, the so-called relic is coincident with very long tails of pressure stripped interstellar medium of a few infalling galaxies. We do not find the usual characteristics supporting the radio relic classification, and speculate that the emission is more likely related to the plasma deposited by the long tails. However, the large extent of the emission is perplexing. This cluster could be the first example where the infalling galaxies are the substantial source of seed electrons that populates the ICM boosting the radio emission.

keywords

Galaxy Clusters, Imaging and Calibration, AGN, star-forming galaxies

In-person or online?

in-person

Career level

Student

Primary author: BHAGAT, Shubham (Thuringer Landessternwarte, Tautenburg)

Presenter: BHAGAT, Shubham (Thuringer Landessternwarte, Tautenburg)

Session Classification: Poster Sparklers