

# Unveiling the spectral properties of radio halos in the galaxy clusters of the LOFAR survey

*Friday, 10 May 2024 11:15 (15 minutes)*

Radio halos are formed in the central regions of galaxy clusters as a result of turbulence caused by the merging of clusters. These halos occur when relativistic electrons in the Intracluster medium emit synchrotron radiation. The connection between the radio halos and the dynamics of galaxy cluster has been established but the spectral properties of radio halos have not been tested extensively. This is due to the absence of low-frequency sensitive radio observations. In this talk, I will present preliminary results on a project aimed to address for the first time in a complete sample the statistical spectral properties of radio halos by combining LOFAR and uGMRT data. This project is based on the analysis of a subsample of XX radio halos covered by LoTSS-DR2 (150 MHz), and that were recently followed-up at the uGMRT in band 4 (650 MHz). Finally, we test the existing model of radio halos having a steep synchrotron spectrum. The prospect of the project will be discussed, particularly empathizing the role that these observations will have to test the formation scenario of radio halos.

## keywords

Radio halos, spectral properties, clusters, LOFAR, uGMRT data

## In-person or online?

in-person

## Career level

Student

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