

Title

**Probing the nature of radio bridge and relic in the low massive galaxy cluster Abell 168**

Abstract

Radio observations have shown the existence of diffuse, steep spectrum and large scale emission associated with the intracluster medium. These steep-spectrum sources are best observed at low frequencies and required high-sensitive radio observations for characterisation. In this proposal, we propose to observe Abell,168 (hereafter A168), a disturbed, nearby, and low mass galaxy cluster hosting a radio relic, with MeerKAT UHF-band (544-1088 MHz). Its LOFAR (144 MHz) observation has revealed the presence of a rare steep-spectrum diffuse source (of the size  $\sim 430$  kpc, radio bridge) connecting the relic and a radio galaxy UGC 797. This radio bridge was not detected in any previous radio observations.

Hence, it is important to observe A168 at  $> 144$  MHz to characterise its spectrum shape. MeerKAT is a powerful instrument and provides good surface brightness sensitivity to observe faint extended emission. Our primary goal is to detect and study the radio bridge in A168, with the MeerKAT UHF band data. Combined with existing LOFAR HBA data, we will extract a spectral index map over the radio emission and characterize the connection between the radio relic, radio bridge and UGC,797.