

Title

Direct Mapping of the Cosmic Web around the Pandora cluster

Abstract

To date, no compelling direct imaging exists of the gas network of the cosmic web at radio wavelength. The detection of synchrotron radiation from the intergalactic medium that extends beyond galaxy clusters has only recently been claimed. However, the uncovered emission has either been from radio bridges connecting merging clusters or has only been detected on a purely statistical level via stacking. A few hints of the hottest phase of the IGM have been detected in X-ray observations of the outskirts of the massive merging galaxy cluster Abell 2744. Low frequency radio images show tentative evidence of faint radio emission at the location of these X-ray filaments. We now propose to observe this cluster with MeerKAT in the UHF band. The excellent inner uv-coverage and sensitivity of MeerKAT may allow the first direct secure detection of non-thermal emission from representative Cosmic Web filaments, with profound ramifications for our understanding of extragalactic magnetic fields.