

# Measuring the cosmic radio dipole with MeerKAT

*Thursday, 9 May 2024 16:40 (15 minutes)*

The cosmic radio dipole is an anisotropy in the number counts of radio sources with respect to the cosmic background. Results have shown a tension between the radio dipole and the dipole as measured from the cosmic microwave background (CMB), presenting an intriguing puzzle as to the cause of this discrepancy. With its high sensitivity and large field of view, each MeerKAT pointing can yield thousands of sources observed in continuum. The MeerKAT Absorption Line Survey (MALS) is a blind search for absorption lines with pointings centred on bright radio sources. We present a dipole measurement carried out on the continuum catalogue of all 391 MALS pointings observed in L-band. The catalogue produced from these pointings covers 1623 square degrees and contains around 800,000 sources. We present the characterisation of completeness and noise properties of the catalogue, as well as novel dipole estimators developed for this measurement. We discuss the challenges that came along with a measurement of the dipole on MALS in the form of some persistent systematics. We discuss some of these systematic effects present in the MeerKAT data and their possible causes, and how these could be addressed for MALS and other surveys that aim to do large scale cosmology.

## keywords

Cosmology, continuum, surveys

## In-person or online?

unsure

## Career level

Student

**Primary author:** WAGENVELD, Jonah (Max Planck institute for Radio Astronomy)

**Presenter:** WAGENVELD, Jonah (Max Planck institute for Radio Astronomy)

**Session Classification:** VLBI & Cosmology