

Extending the MeerKAT Monitoring of the Akari Deep Field South - Multi-Wavelength Time-Domain Science with MeerKAT/MeerLICHT on the way to SKA/LSST

Abstract

We propose to use MeerKAT to probe the variability properties of the faint radio sky over monthly-yearly time scales. Namely, we propose to extend the temporal baseline of an existing multi-epoch single-pointing MeerKAT Imaging Survey of the Akari Deep Field South (ADFS) from 2~months to 2~years. We will add six epochs to the four existing ones with a nominal (but flexible) 2~month cadence. With a single-epoch sensitivity of $5\text{--}\mu\text{Jy}/\text{beam}$ rms, this will be the deepest survey of radio transient/variable sources to date and will allow us to shed light on the abundance and on the nature of such events in the faint radio sky. This will be accompanied by MeerLICHT observations, which together with the excellent multi-wavelength data available from the ultraviolet to the millimeter will be used to clarify the nature of stable, transient and slowly-varying sources in the field and pave the way for more ambitious future radio/optical variability surveys on the way to SKA/LSST.