

Title

**Characterising multi-frequency behaviour of newly activated repeating Fast Radio Bursts**

Abstract

Fast Radio Bursts (FRBs) are bright, millisecond-duration radio pulses of extragalactic origin. Discovered in 2007, hundreds have been published, and about fifty have been localised to their host galaxies. While their origins remain uncertain, recent observations have established that some FRBs could be produced by magnetars. Most FRBs are only detected once, but about fifty of them have been shown to repeat. Differences in the time-frequency structure between the bursts of repeaters and one-offs suggest different sources or emission mechanisms, warranting separate studies of both populations. Some repeaters remain active for years, while others exhibit brief, intense periods of activity.

In this target of opportunity proposal, we request 68 h of observations to follow up two new repeaters that might be discovered during the upcoming MeerKAT observing cycle. We propose to observe them on nine separate days with quasi-logarithmic spacing, with observations in the UHF, L-band and S0-band on each day. We will use this to determine how the burst rate evolves with frequency and time, and measure frequency-dependent propagation effects including scattering, scintillation, and Faraday rotation. This will allow us to test different emission mechanisms and to characterise their local environments. Additionally, we aim to localise these new repeaters with sub-arcsecond accuracy to their host galaxies, determine their redshift through optical observations, and search for persistent radio sources within our MeerKAT observations. Altogether, these observations will leverage the unique capabilities that MeerKAT offers to explore the origin of repeating FRBs from multiple angles.