

Simultaneous wide-band study of FRB~20201124A during its outbursts

Abstract

FRB 20201124A is a repeating FRB that can be extremely active during outbursts and emits extraordinarily bright bursts. Previous observations showed that FRB 20201124A resides in a complicated, dynamically evolving, magnetised environment, which provides us with a unique opportunity to probe the origin of FRBs in these extreme environments. We propose to carry out simultaneous UHF, L-band and S-band (if available) observations of FRB 20201124A using MeerKAT sub-arrays when it enters a new outburst. Simultaneous wide-band observations will allow us to study the polarization and spectral properties of this FRB across a wide frequency band, investigate the frequency dependence of burst rates, and measure dispersion measure (DM) and rotation measure (RM) variations. Combining the superior sensitivity and frequency coverage of MeerKAT, we expect these new observations to shed new light on the nature of this FRB.