

Polarisation and wide-band spectrum of the persistent radio source associated with FRB 190520B

Abstract

The local environment of actively repeating fast radio bursts (FRBs) has been shown to be extremely complex and highly magnetized. The recently localized FRB 20190520B has the largest confirmed host dispersion measure, shows extreme sign change of rotation measure, and is only the second FRB source associated with a compact, persistent radio source (PRS). These observations suggest that the FRB source could be in the vicinity of massive black holes, a magnetized companion star in binary systems, or a young supernova remnant along the line of sight. Here we propose to obtain deep continuum images (L-band and UHF band) of the PRS associated with FRB 190520B. Compared with previous studies, MeerKAT will offer us not only superb sensitivities but also frequency ranges (~600 to 1700 MHz) that have not been explored for the PRS before. With these observations, we will carry out the deepest search for polarised emissions from the PRS and characterize its wide-band spectrum. Our results will be compared with predictions of theoretical models of FRBs and provide new insights into the origin and local environment of actively repeating FRBs.