

Observing the Galactic Center magnetar J1745-2900

Abstract

In this proposal we aim to utilise the unparalleled sensitivity of MeerKAT operating at S-band to detect and monitor the Galactic Centre magnetar PSR J1745–2900 in its current weak state. Observations conducted by our team with the Effelsberg telescope have shown a wide variety of extreme phenomena from this unique source, but in recent years only marginal detections of PSR J1745–2900 can be made due to an overall reduction in activity and the corresponding flux density. We propose to use MeerKAT to continue and extend the baseline of measurements of properties such as extreme Faraday rotation, pulse scattering and the rotational parameters. Through these we can probe the magneto-ionic properties (turbulence, magnetic field strength) of the black hole reservoir, understand the uncertain scattering environment and test for the presence of any dynamical effects caused by a companion in this region of extreme stellar density.