

Probing the Astrophysics of Neutron Star Mergers with Radio Afterglows

Abstract

The afterglow of GW170817 probed the merger geometry as well as the morphology and energy of the fast ejecta launched by the binary neutron star merger. Here we propose MeerKAT L-band follow-up of the afterglows of neutron star mergers, having well-localized electromagnetic counterparts, that will be discovered during the upcoming O4 gravitational-wave run. Importantly, the L-band light curves together with multi-wavelength data will provide key information on the ultra-relativistic jets and wide-angle outflows (cocoon), as well as the merger environments and remnants. This is a resubmission of our previous successful MeerKAT (priority A) proposal, updated with the new O4 operations timeline.