

Title

**Elucidating the Explosion and Jet Properties of Cosmological Short GRBs**

Abstract

Short gamma-ray bursts (GRBs) are relativistic explosions which originate from the mergers of two compact objects (NS-NS/NS-BH). Such merging systems are also at the forefront of transient astrophysics, with the multi-messenger discovery of GW170817. Modeling of GRB afterglow emission, from the radio to X-ray bands, provides a unique way to probe the burst basic explosion properties: the energy scale, circumburst densities, and jet opening angles. These properties not only provide critical insight into merger environments, but also serve as a vital baseline for comparison to radio emission from gravitational wave events. In the radio band, this effort requires the sensitivity and dynamic scheduling capabilities of MeerKAT. Here, we propose to use MeerKAT TOO observations to identify and monitor the radio afterglows of 4 new short GRBs, and track their 60-day evolution. We employ an observing strategy for this proposal that will be sensitive to extraordinarily low environmental densities, as well as both wide and narrow jets. This program will enable us to probe uncharted territory in terms of short GRB jet evolution, and provide an essential part of the SED that has been inaccessible to past short GRB afterglow studies.