

Constraining the properties of Very High Energy detected GRBs with MeerKAT

Abstract

Only five Gamma-Ray Bursts (GRBs) have been detected at very high energy (VHE; >100 GeV) so far, and any possible peculiarities of these bursts will become clearer as the sample of events increases: are they drawn from the same population of normal GRBs? Or, conversely, do they occur in particularly high density and/or dusty environments? To test these hypotheses, we request 10 observations of 2.25 hours each, in order to track the radio light curve of a GRB that has been detected with the MAGIC and/or the H.E.S.S. Telescopes. Together with publicly available optical and X-ray data, the proposed campaign will allow us to study the internal jet physics, the geometry and physical evolution of the jet, whilst also building a statistical afterglow sample. Moreover, a detection with MeerKAT will be used as a pathfinder to trigger Very Long Baseline Interferometry observations, in order to pinpoint a possible superluminal expansion (on-axis GRB) or proper motion (off-axis GRB).