MKT-23135

Probing The Origin of Late-Time Radio Emission in TDEs

Abstract

Recent observations indicate that radio emission from about 40% of tidal disruption events (TDEs) can rapidly turn on 2-3 years after disruption, despite being absent at an early time. Multi-frequency follow-up observations of several such TDEs can study the evolution of such outflows, and measure their physical properties (radius, energy, ambient density). However, it is the evolution of these properties that can unveil the origin of the late emission- off-axis jets, delayed launch, or interaction with a dense region near the supermassive black hole- as well as how they compare to TDEs detected in radio at early times. Here we request observations of several TDEs at late times to measure velocities, changes in energy, and radial evolution of the density, which will directly reveal the underlying mechanism for the late emission. We request two 3-hour S+L+UHF observations of AT2018dyb, an extremely southern TDE that has brightened by a factor of ~10x 1,000 days post-disruption, and seven 1 hour UHF-only observations for 6 TDEs, to be coordinated with VLA observations. We further request 1 hour L-band observations of 2 TDEs that are several years old and have not been detected by MeerKAT, in order to determine whether they will turn on at later times. Our total request is 15 hours to unveil the origin of an unexpected phenomenon in TDEs.