

Exploring the New Phenomenon of Delayed Radio Flares in Tidal Disruption Events

Abstract

The observations of tidal disruptions events (TDEs), when a star is tidally disrupted when it passes too close to a supermassive black hole, continue to provide new unsolved puzzles. Such, is the latest discovery of a neutrino event, which is claimed to be associated with the TDE AT2019DSG and detected about 180 after the TDE was discovered. Another recent discovery shows that some TDEs exhibit delayed radio flares (after several months of non-detections, e.g. ASASSN-15oi) while some exhibit a late-time excess in their radio emission (a flare) on top of the weak radio emission, detected early on. Recently, a connection between a delayed radio flare and a delayed X-ray flare was also found. It suggests a transition in the supermassive black hole accretion state as a possible explanation. These newly discovered delayed radio flares excess are yet another new puzzle in the field of TDEs and we propose to search for additional such events and characterize them using MeerKAT.