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Modeling radio and X-ray afterglows of jetted TDEs

Wednesday 26 February 2025 12:15 (30 minutes)

Four tidal disruption events—Sw J1644, Sw J1112, Sw J2058, and AT 2022cmc—have been identified as exhibiting luminous jets accompanied by rapidly declining non-thermal X-ray emissions. In this talk, I will discuss our recent work on modeling the multi-wavelength emissions from the jetted TDE AT2022cmc, where a two-component jet is considered to interpret the spectral and temporal signatures of AT2022cmc. I will demonstrate that the X-ray spectra and fast-decaying light curves extending up to 400 days post-disruption can be well explained by electron synchrotron emission from the fast jet's reverse shock, while the radio observations could be attributed to slow jet forward shocks. The talk will also cover the application of the reverse shock model to interpret the X-ray afterglows from all four aforementioned jetted TDEs, as well as their gamma-ray and neutrino detectability.

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