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Current Challenges and New Frontiers in the Next Decade

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The place of TDE within the demography of Black Hole accretion

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Accretion onto a Black Hole seems to be a universal phenomena: it occurs in Black Holes of all masses, from galactic X-ray Binaries with stellar mass Black Holes, to extragalactic Active Galactic Nuclei harboring Supermassive Black Holes. A question naturally arises in this context: is the nature of the accretion onto Black Holes also universal across the mass range? In this work, we extend this question to the Tidal Disruption Events (TDEs). TDE, or the burst of emission due to the tidal disruption of stars by Supermassive Black Holes, is a unique laboratory to probe various high energy astrophysical phenomena much like the X-ray binaries, although in higher black hole masses ($10^{5-8} M_{\odot}$). As such they might be considered as short-lived Active Galactic Nuclei. We try to find the place of these TDEs in the unification scheme of accretion phenomena across the different black hole masses. For this purpose, we selected a sample of TDEs observed by Swift, having a sufficient number of simultaneous UV and X-ray observations, as well as considerable emission in both the energy bands. We compare the UV to X-ray emission from this sample of TDEs with a sample of AGN of different masses and accretion rates, and from galactic Black Holes in the different states. This not only gives us an idea about the place of TDE in the demography of BH accretions but also provide us more clues about the UV and X-ray emissions of TDEs themselves.

Topic

Multi-messenger and transient astronomy

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