

Celebrating 20 years of Swift Discoveries



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A library of super Eddington outbursts in the era of modern observatories

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X-ray pulsars offer a unique laboratory for the study of radiation processes in extreme accretion. X-ray pulsars are found typically in high-mass X-ray binaries (HMXBs), while the brightest and most variable ones are those where the donor is a Be star (i.e. BeXRBs). Their environment combines some of the strongest magnetic fields ($> 10^{12}$ G) and effects of strong gravity, while also allowing us to gain insight onto the Neutron Stars (NS) equation of state. Bright outbursts of BeXRBs have also helped us understand the brightest binary systems, the so-called Ultra-luminous X-ray sources.

We analyzed X-ray data from multiple observatories (e.g. Swift, NICER, NuSTAR, XMM-Newton) from super-Eddington outbursts of BeXRB pulsars in the local Universe (LMC, SMC or Milky Way). We studied their spectral hardness and pulsed fraction evolution with X-ray Luminosity. We identified patterns of variability that hint at changes in the accretion regime and probed super Eddington accretion. Here we present results from this unique library of events.

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