

## Celebrating 20 years of Swift Discoveries



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# Exploring BeXRBs Major Outbursts: Insights from X-ray and Optical Variability

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The Magellanic Clouds (MCs) provide an unparalleled laboratory for studying high-mass X-ray binaries (HMXBs) due to their moderate, well-constrained distances and relative isolation from the Galactic plane. Among these systems, Be X-ray binaries (BeXRBs) –featuring Be-type stars as donor companions –stand out for their remarkable variability, including prominent outbursts in both X-ray and optical wavelengths. Systems in the MCs are particularly valuable for investigating super-Eddington accretion during major X-ray outbursts, as similarly bright events are perhaps only seen in Galactic BeXRB pulsar Swift J0243.6+6124.

Recent advances, enabled by extensive monitoring through X-ray observatories such as Swift and the optical OGLE survey, have provided unique datasets for analyzing major outbursts over the past decade. In this talk, I will present findings on the super-Eddington regime in BeXRBs, including constraints on neutron star magnetic fields and system orbital parameters through the application of torque models. Additionally, I will examine the relationship between X-ray and optical variability observed during these events, offering new insights into the mechanisms driving the extreme behavior of these remarkable astrophysical systems.

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