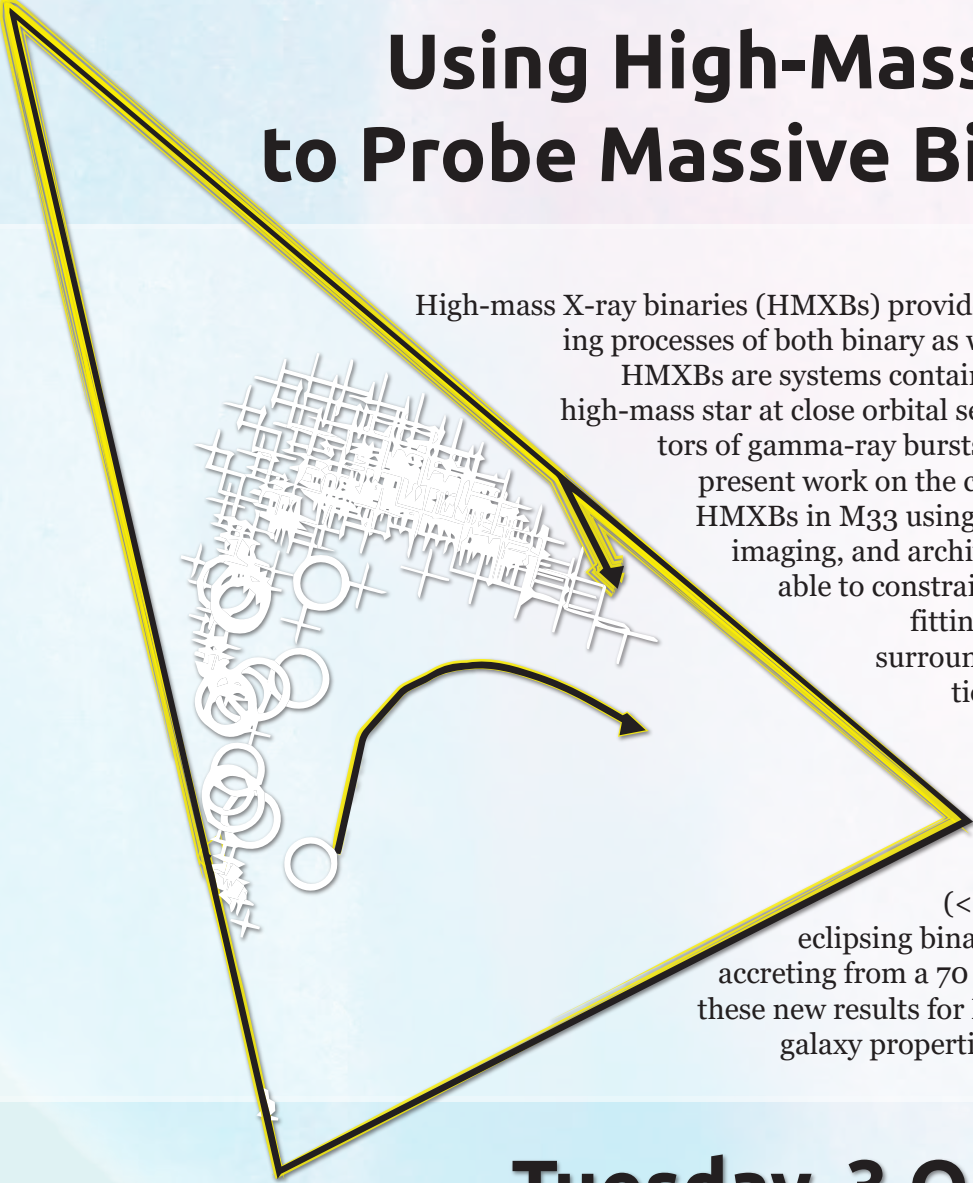# Astrophyiscs Seminar Series

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Using High-Mass X-ray Binaries to Probe Massive Binary Evolution

High-mass X-ray binaries (HMXBs) provide an exciting window into the underlying processes of both binary as well as massive star evolution. Because HMXBs are systems containing a compact object accreting from a high-mass star at close orbital separations they are also likely progenitors of gamma-ray bursts and gravitational wave sources. I will present work on the classification and age measurements of HMXBs in M33 using a combination of deep Chandra X-ray imaging, and archival Hubble Space Telescope data. I am able to constrain the ages of the HMXB candidates by fitting the color-magnitude diagrams of the surrounding stars, which yield the star formation histories of the surrounding region. Unlike the age distributions measured for HMXB populations in the Magellenic Clouds, the age distribution for the HMXB population in M33 contains a number of extremely young (<5 Myr) sources, including M33 X-7, an eclipsing binary composed of a ~15 Msun black hole accreting from a 70 Msun O star companion. I will discuss these new results for M33 in the context of the effect of host galaxy properties on the observed HMXB population.

Tuesday, 3 Oct • 3:30 PM

Bell Room (103) • Rutherford Physics Building