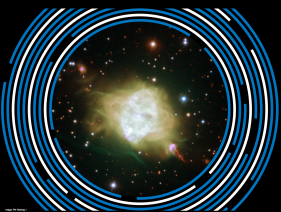


Using High-Mass X-ray Binaries in M33 to Probe Massive Star Evolution

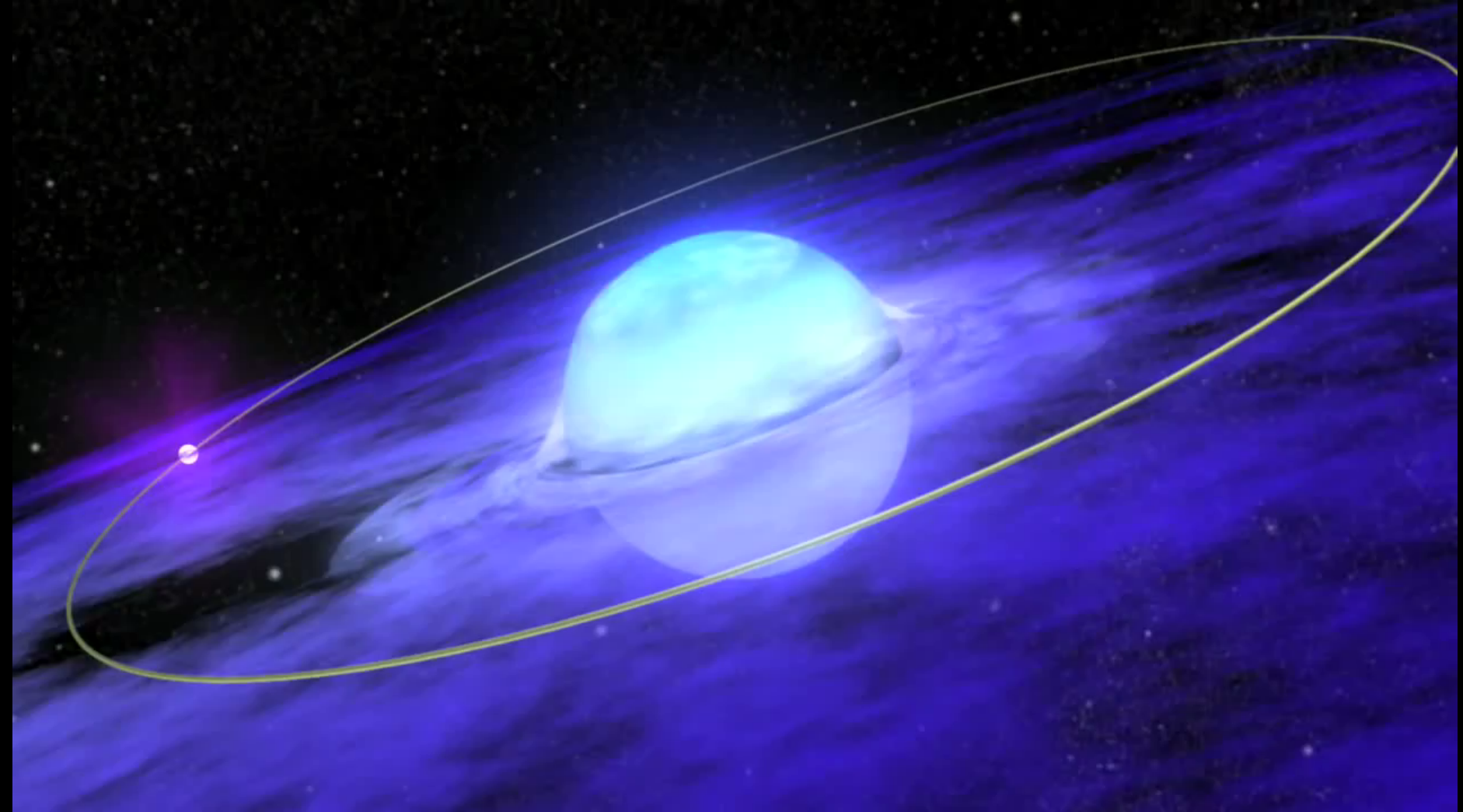
Kristen Garofali

with Benjamin F. Williams

University of Washington

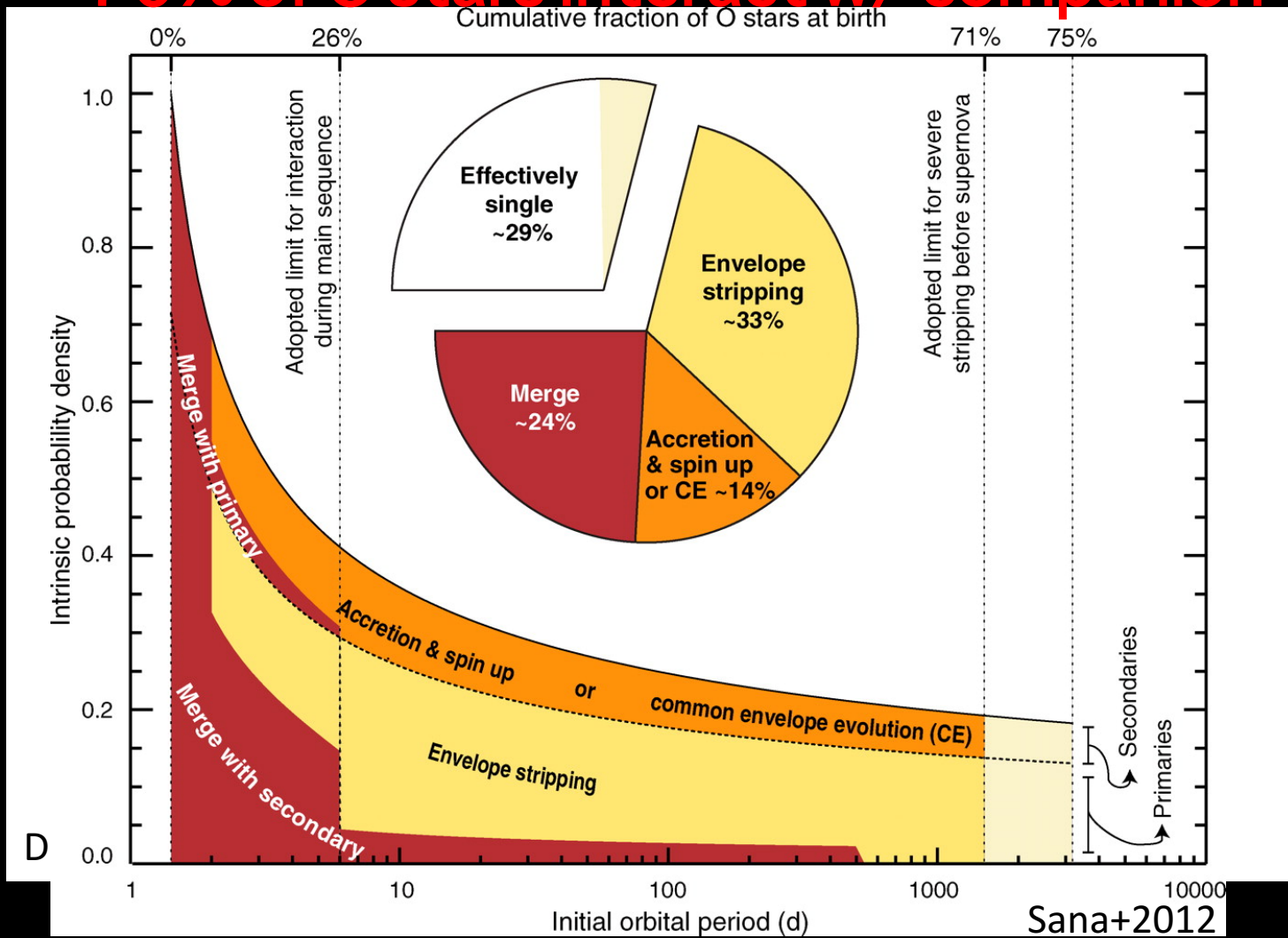


High-Mass X-ray Binaries

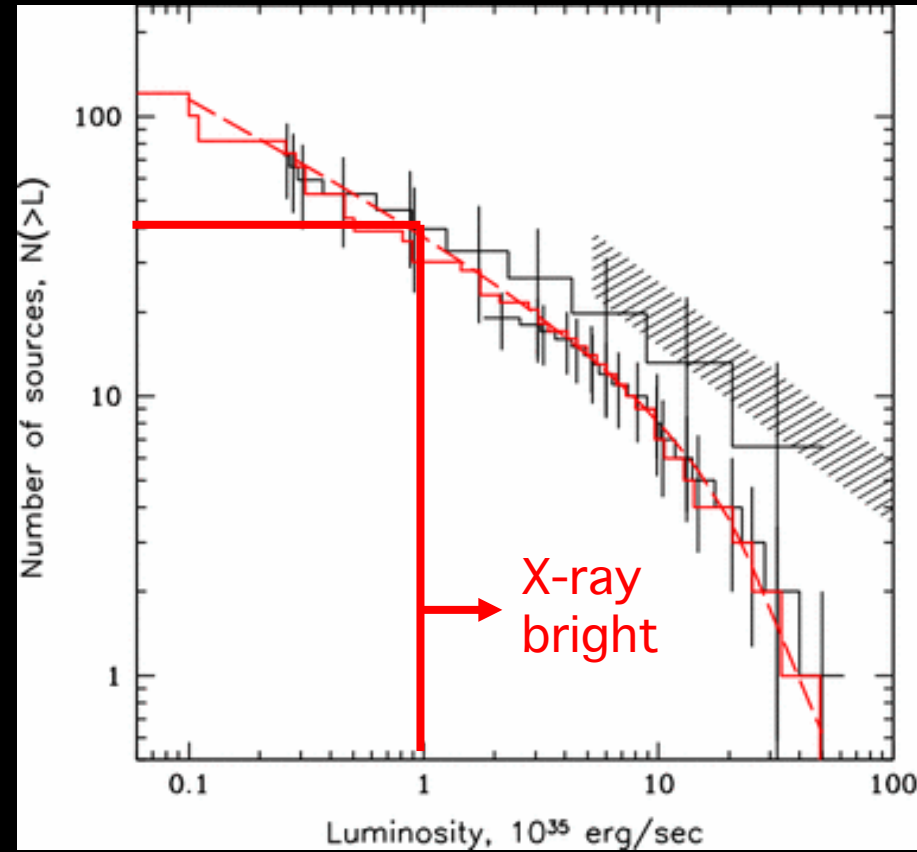
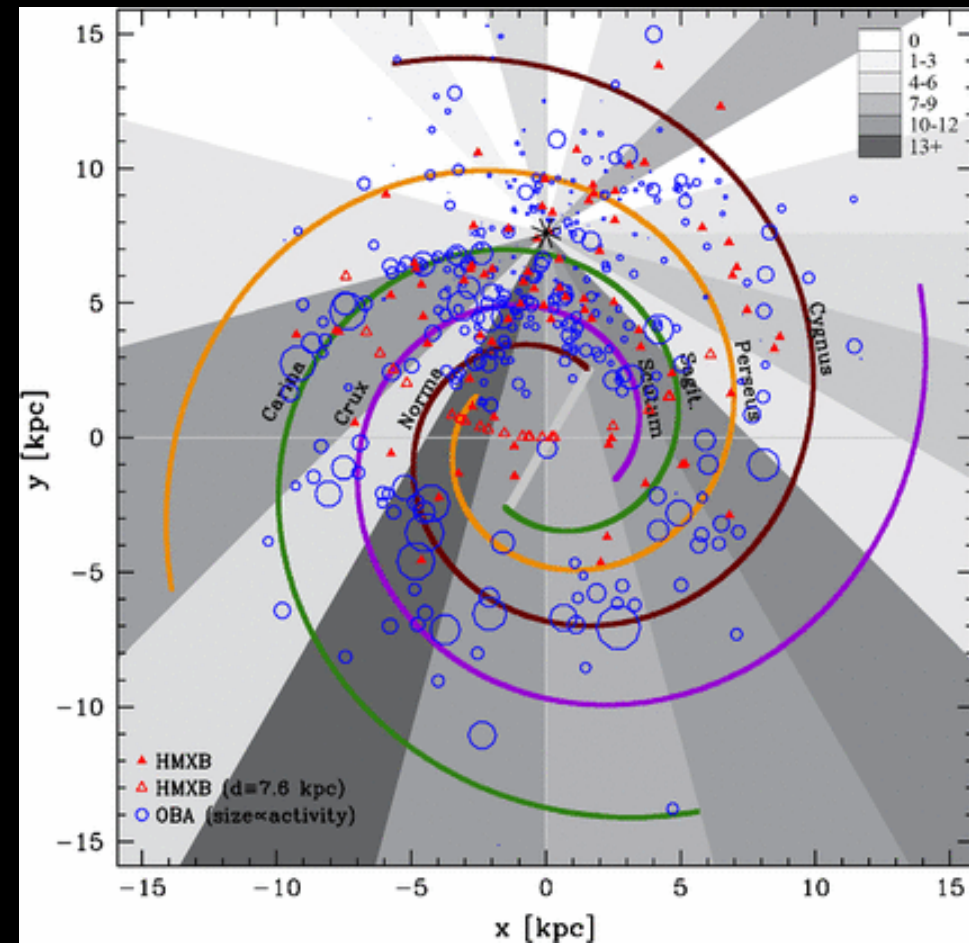


Multiplicity and High-Mass Stars

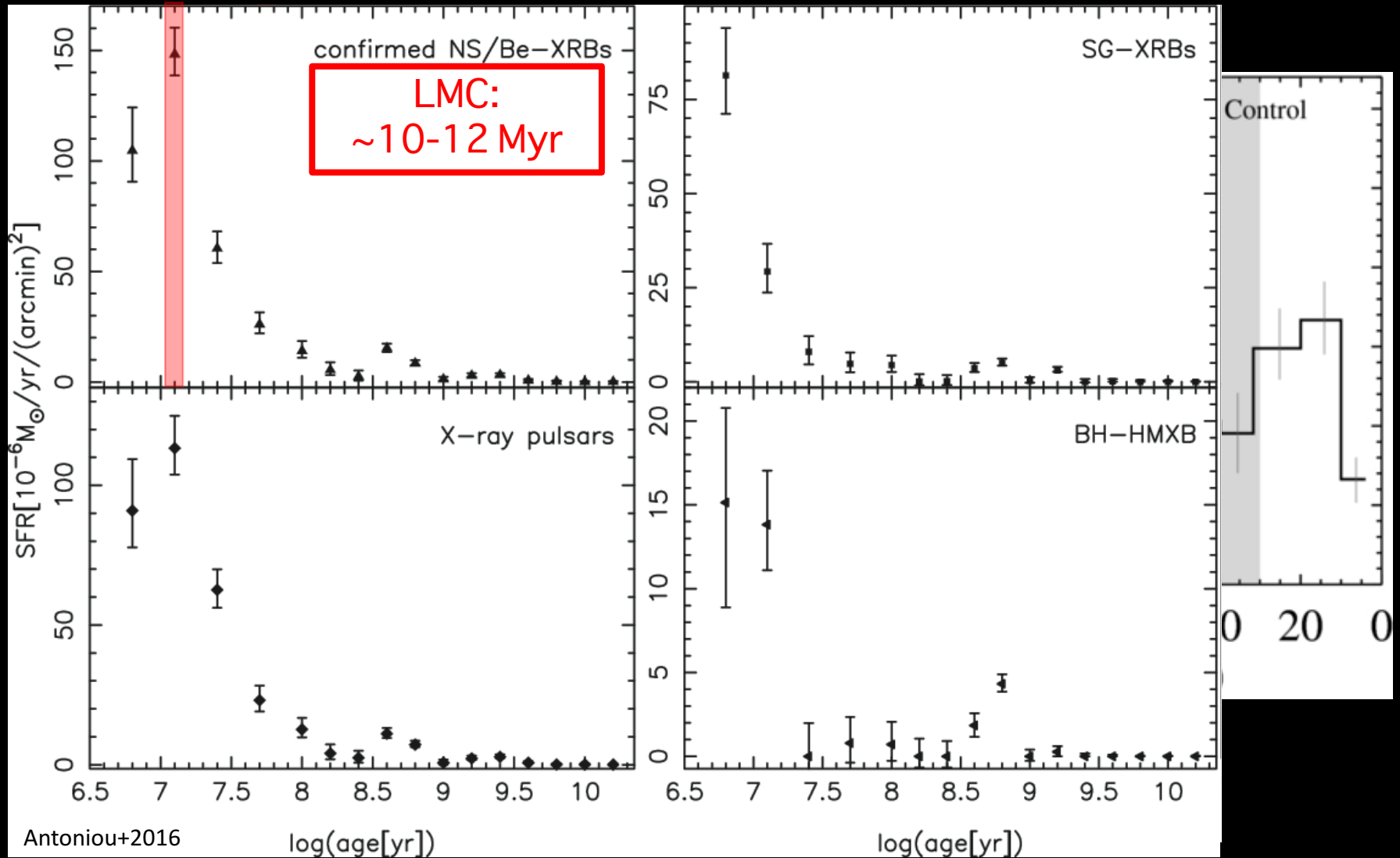
~70% of O stars interact w/ companion



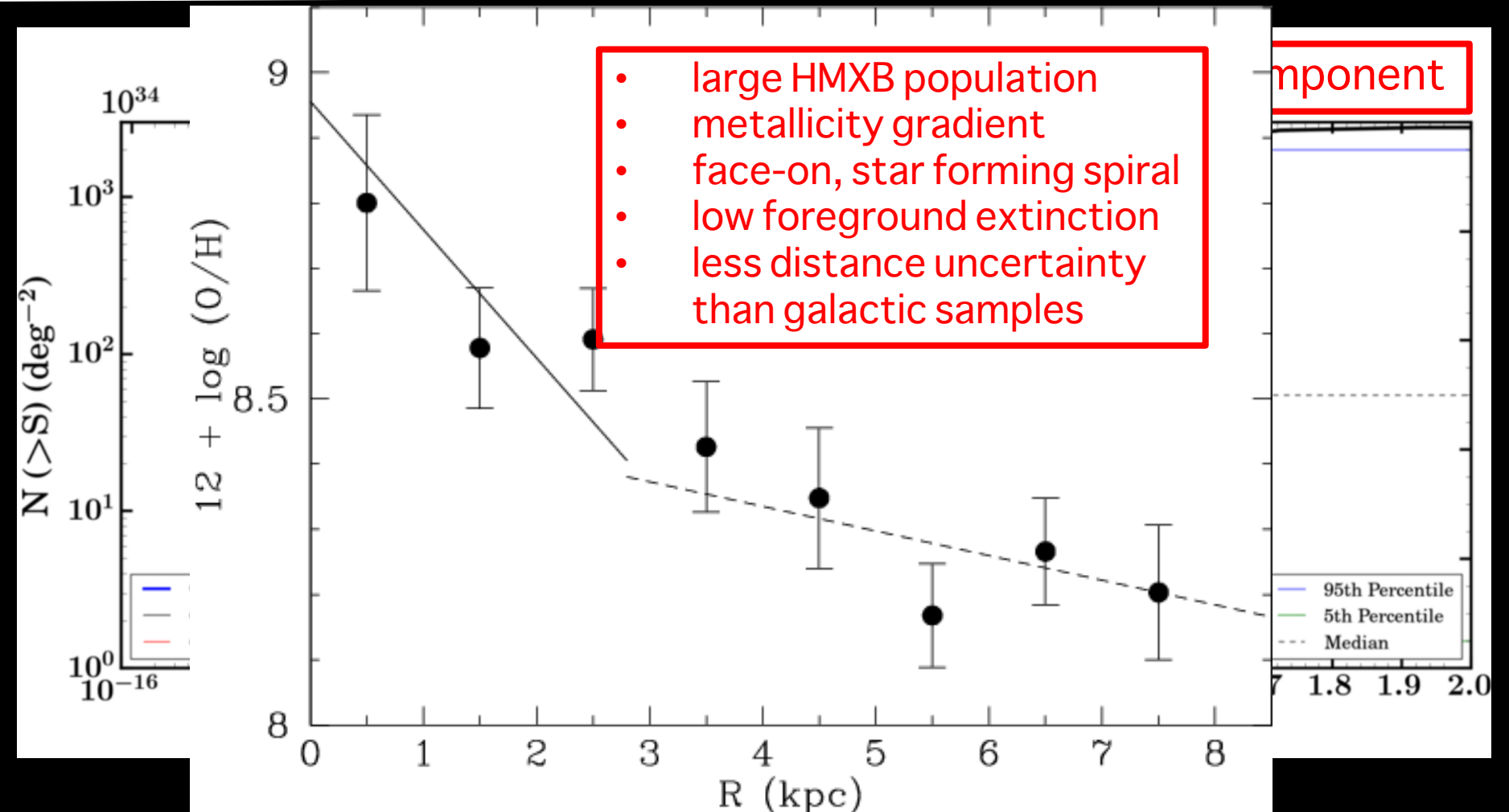
Galactic HMXBs



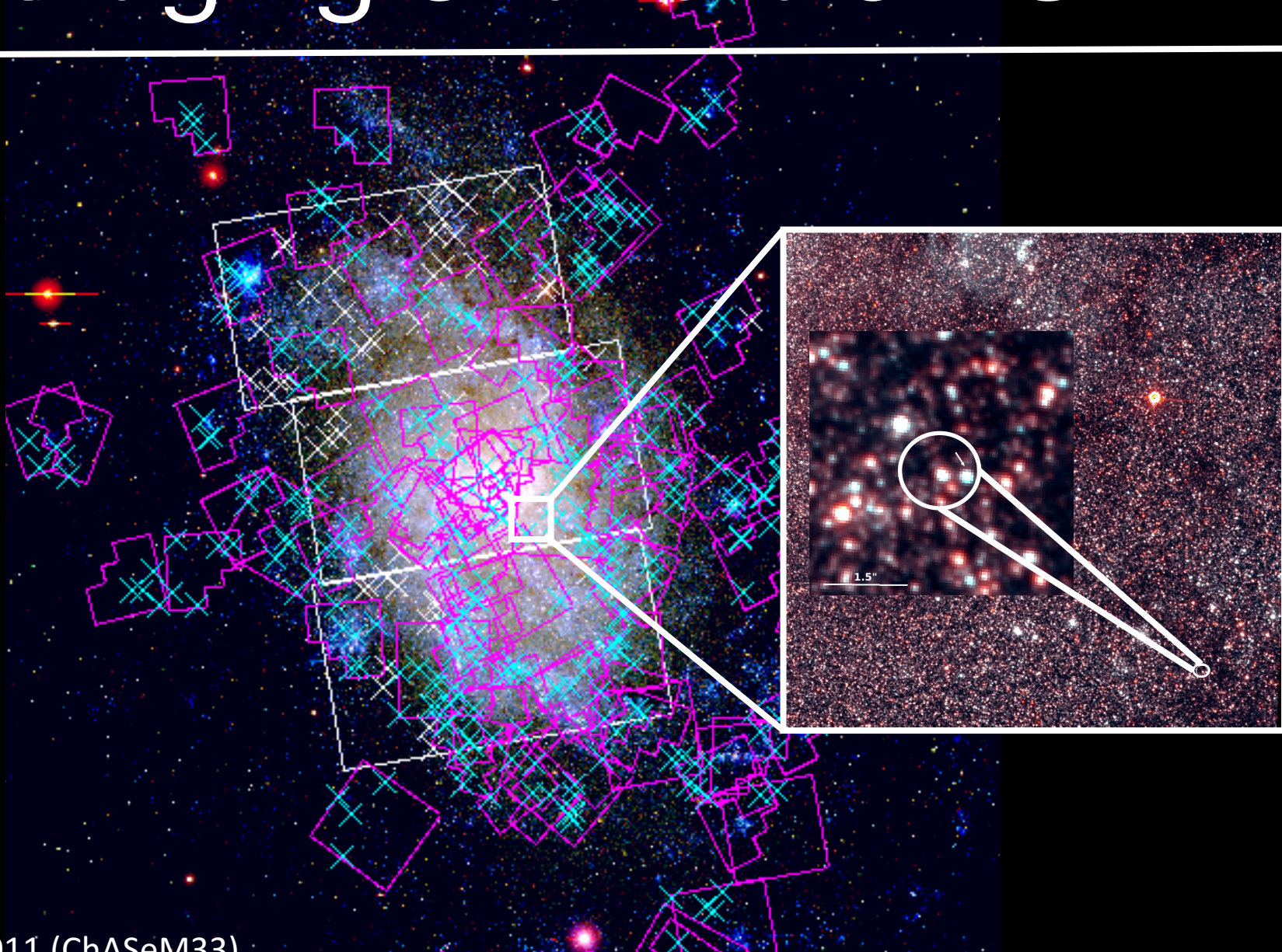
Extragalactic HMXBs



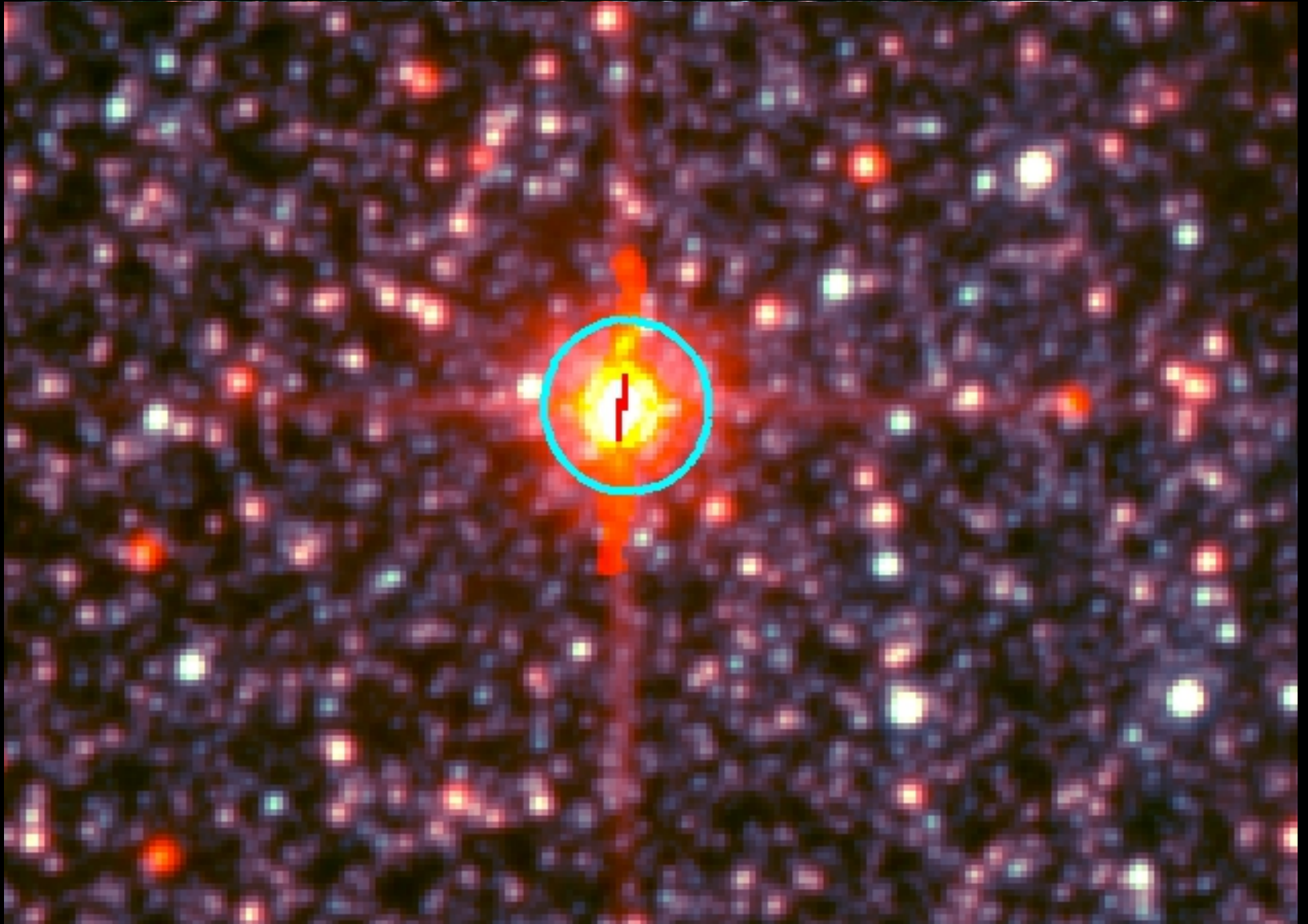
The X-ray Source Population of M33



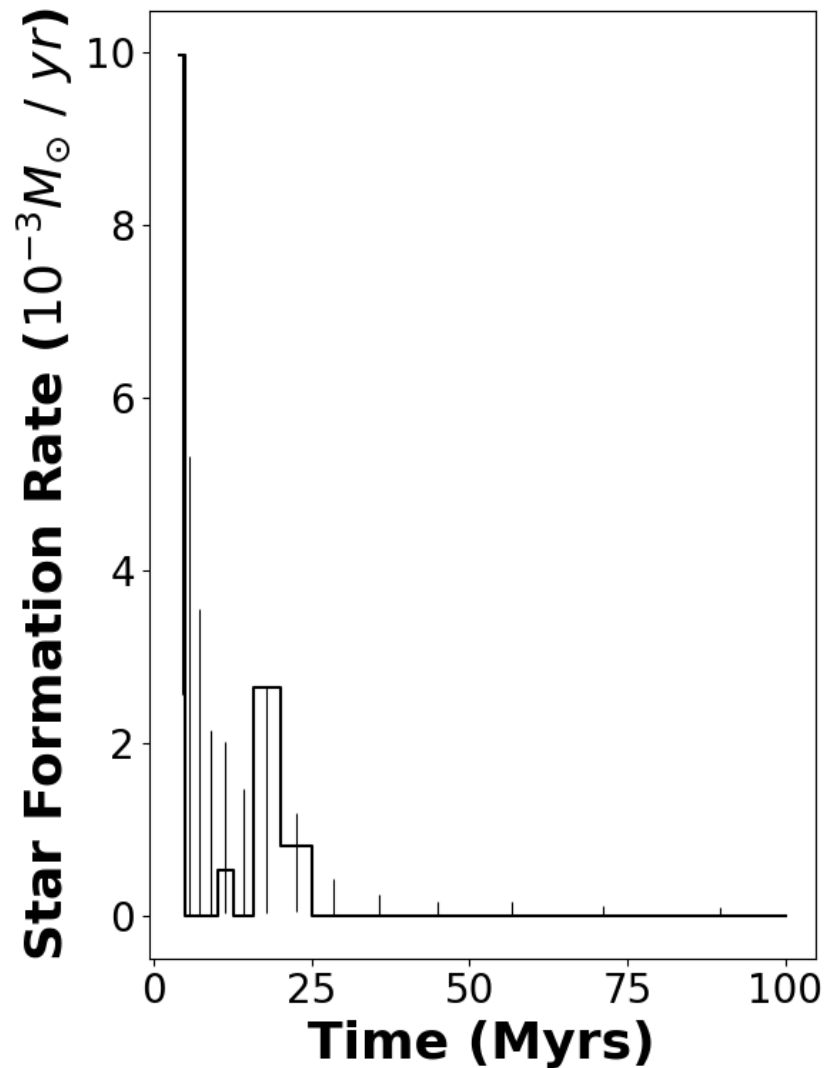
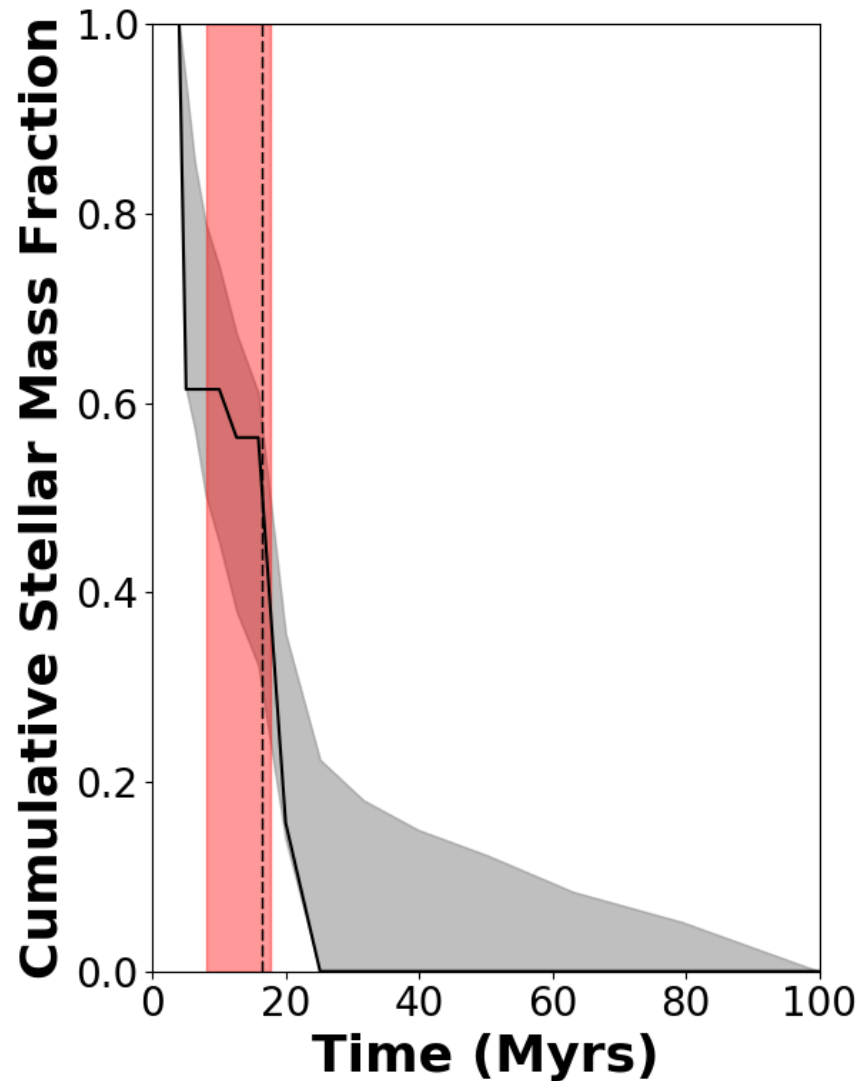
Leveraging *Chandra* & *HST*



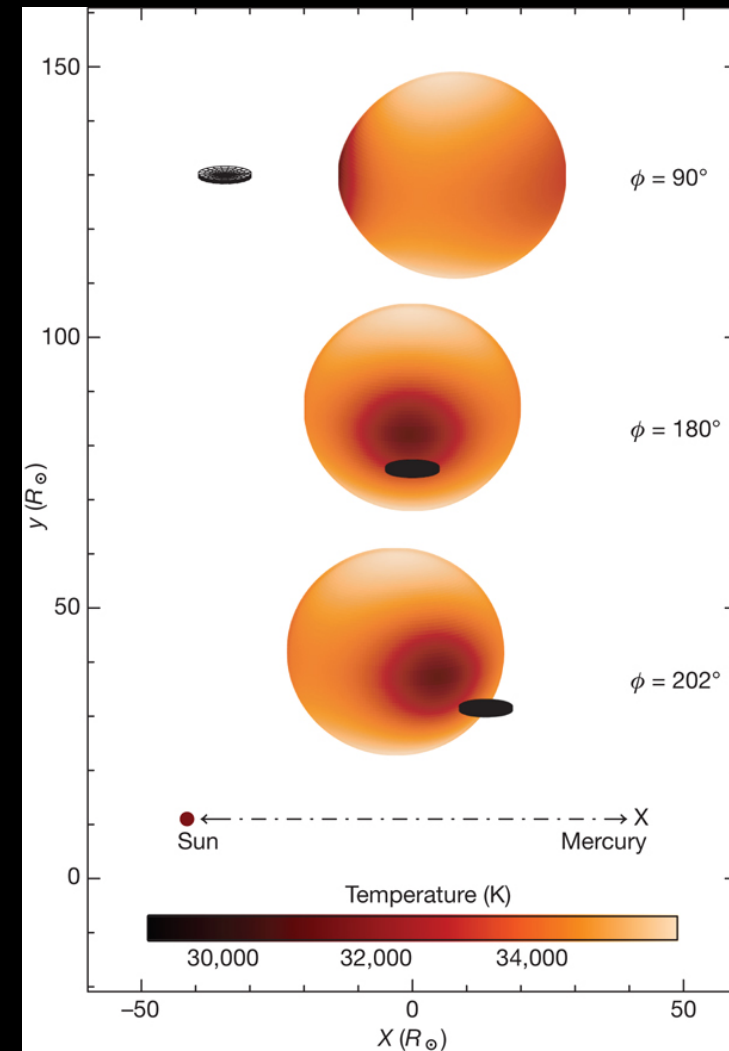
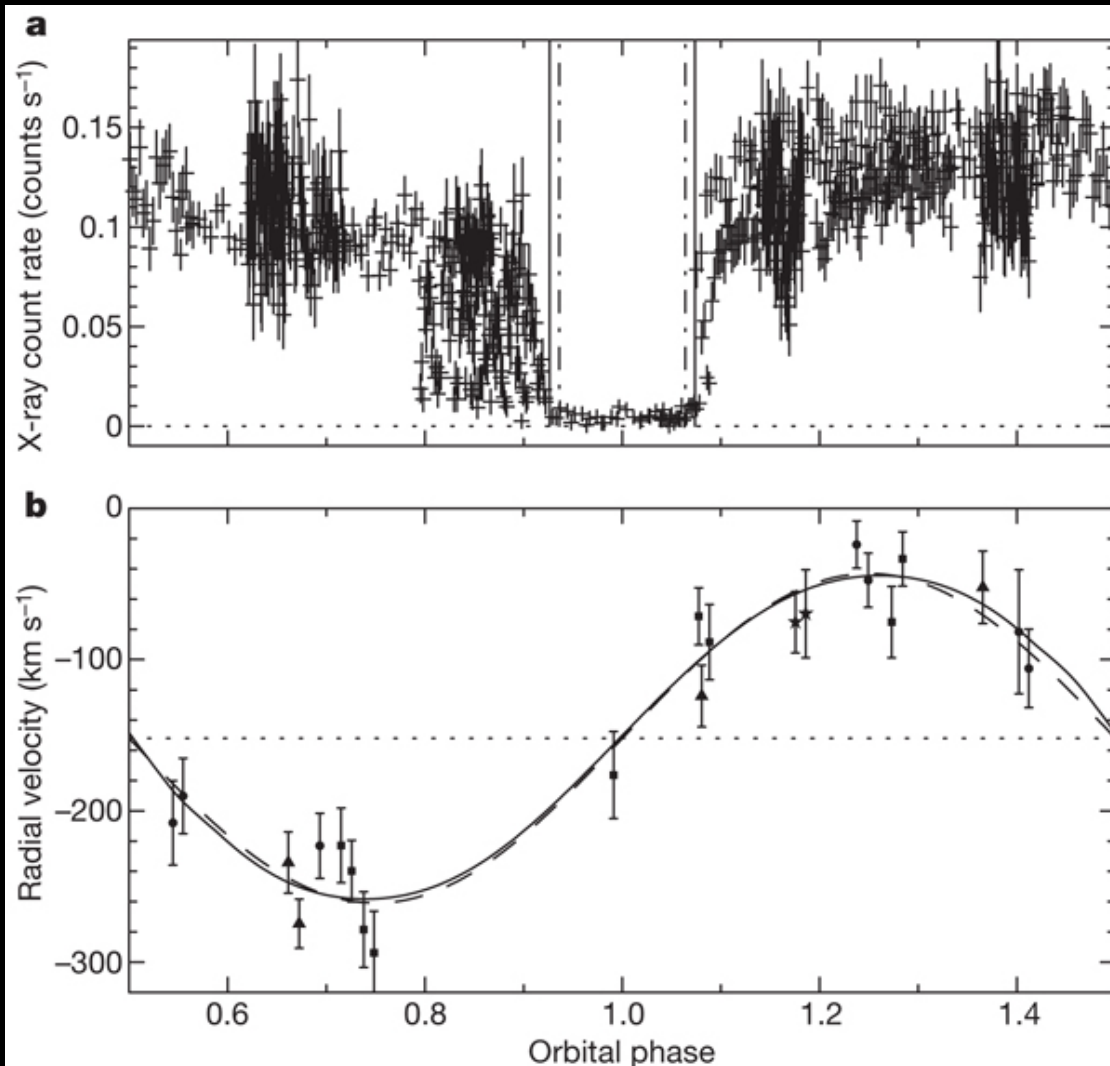
Alignment & Counterpart ID



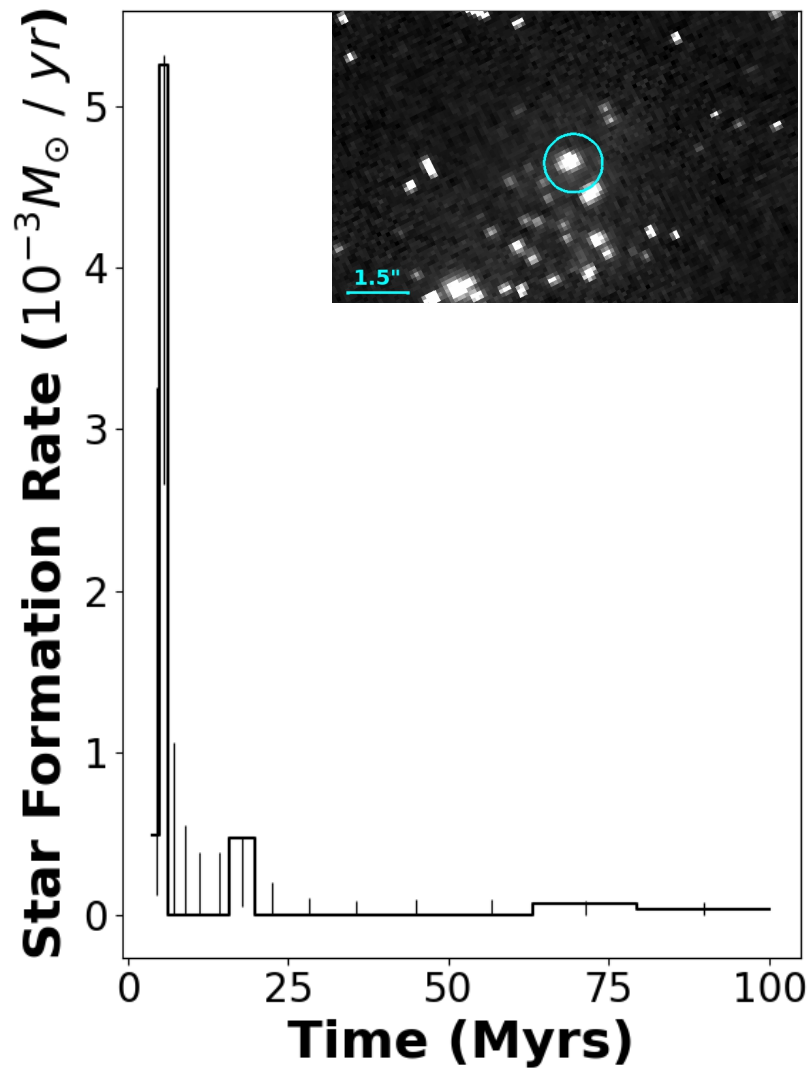
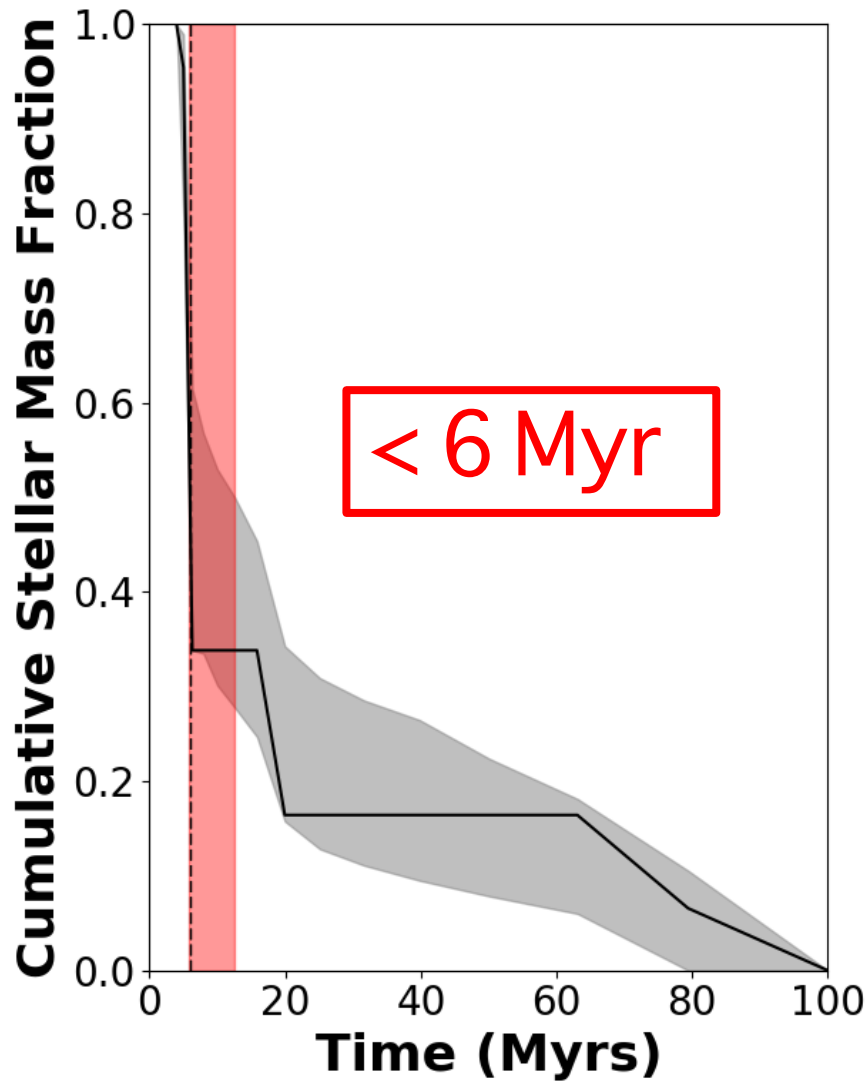
Measuring HMXB Ages



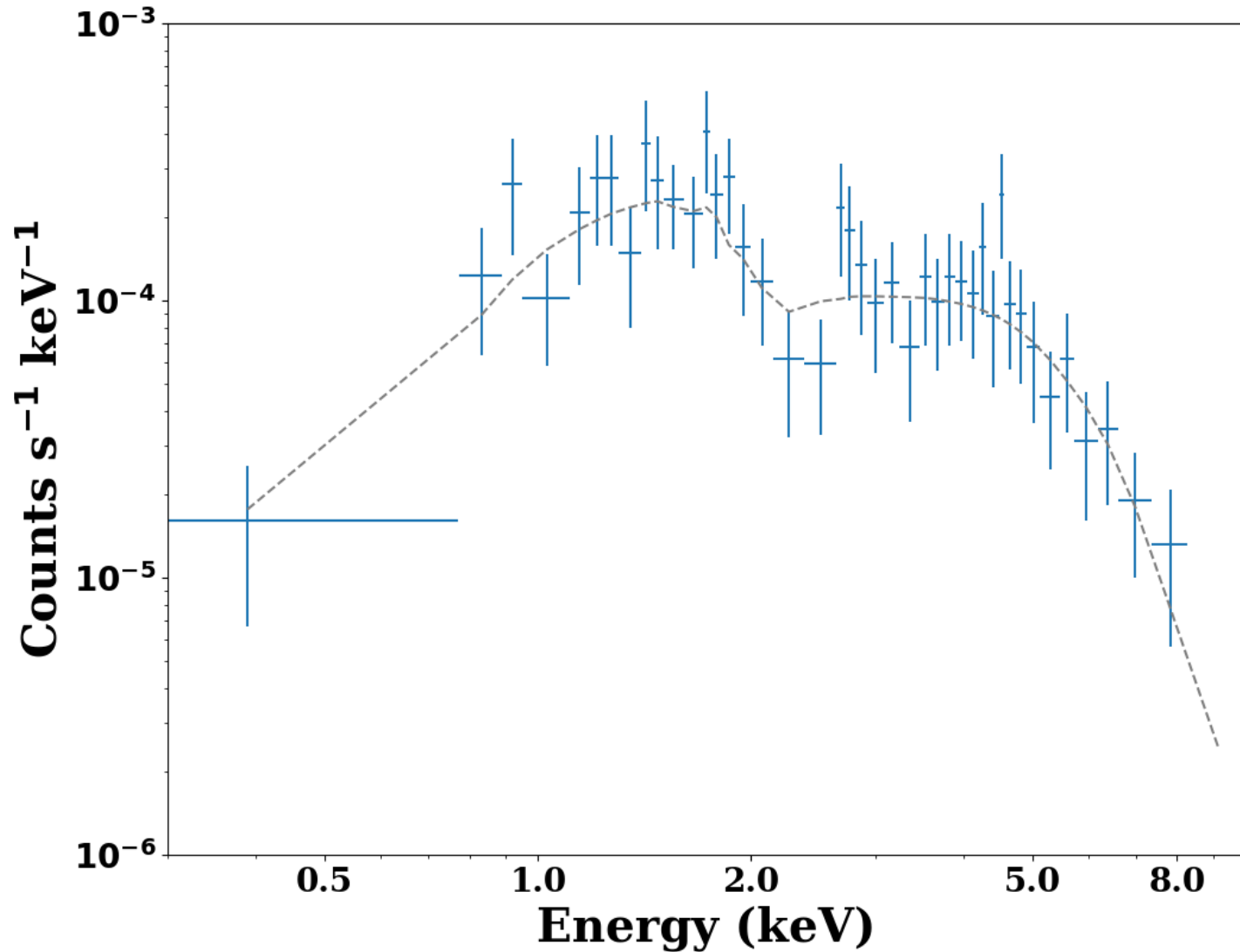
M33 X-7: An Eclipsing XRB



The Age of M33 X-7

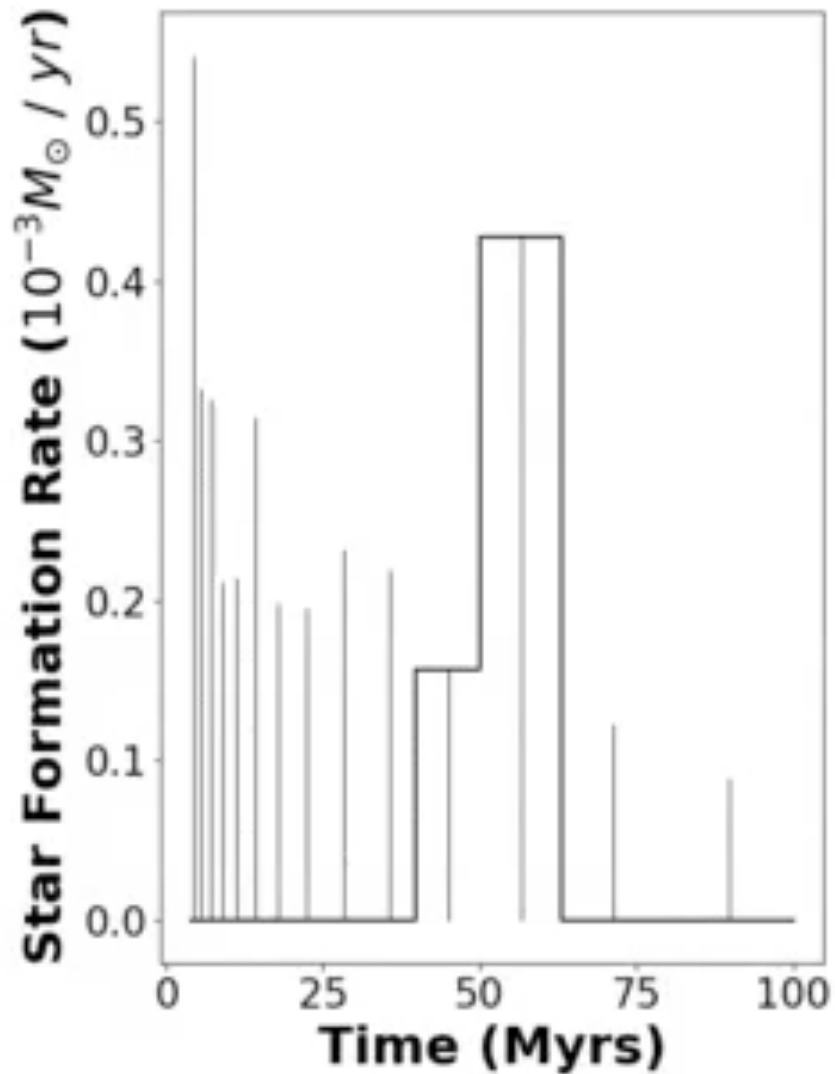
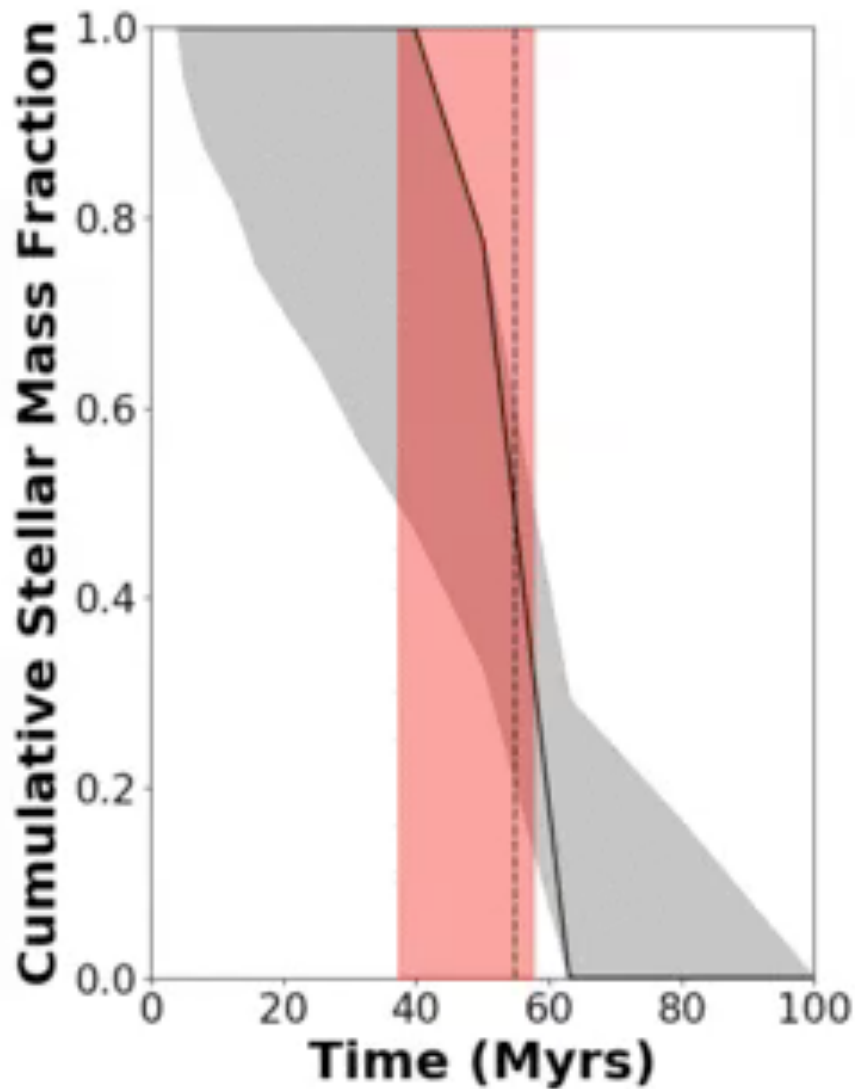


HMXB Variability



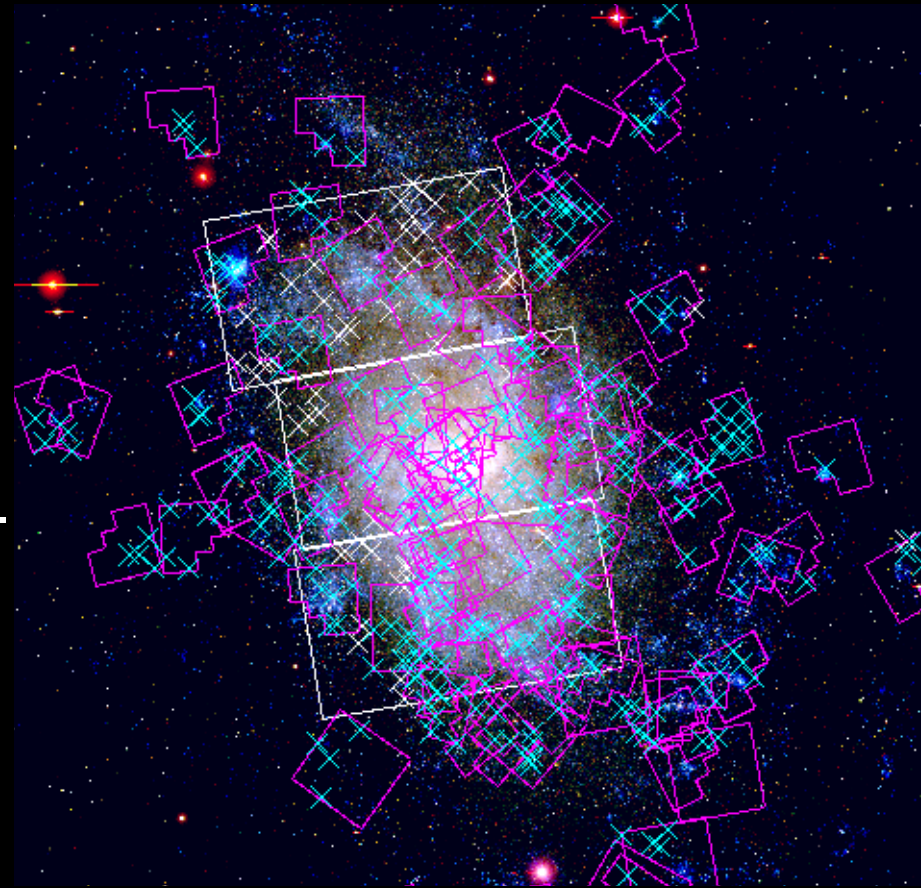
100

Young Candidate HMXBs in M33

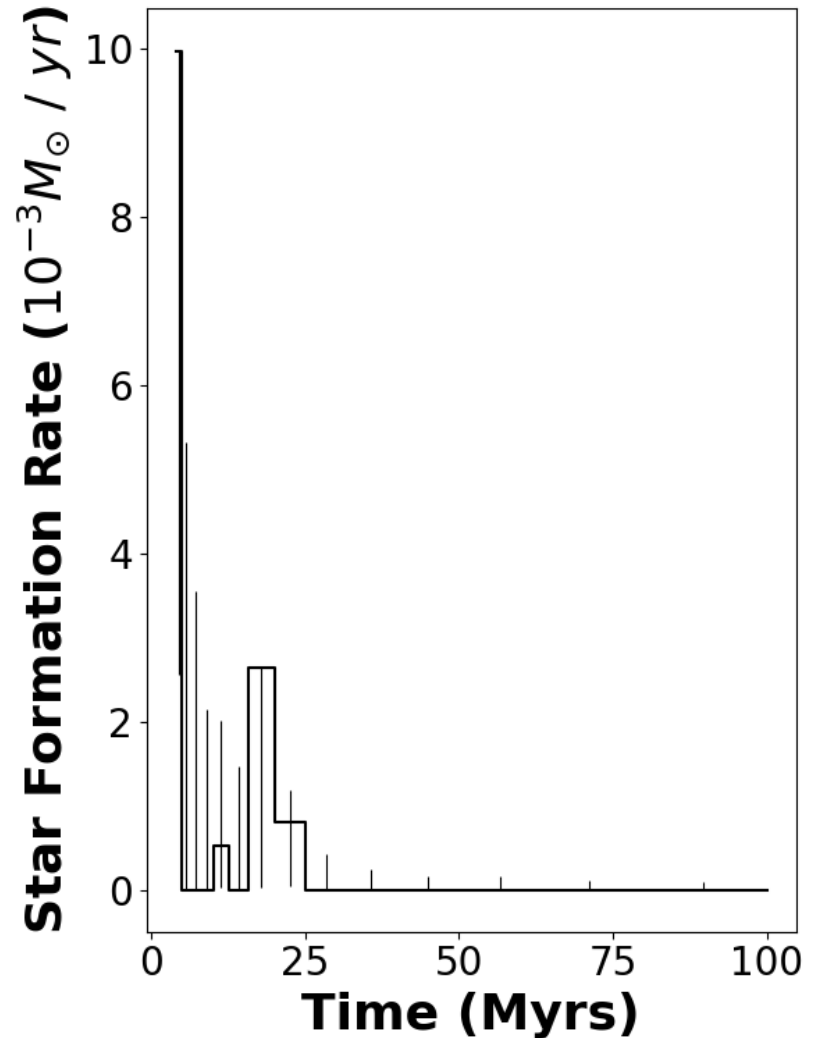
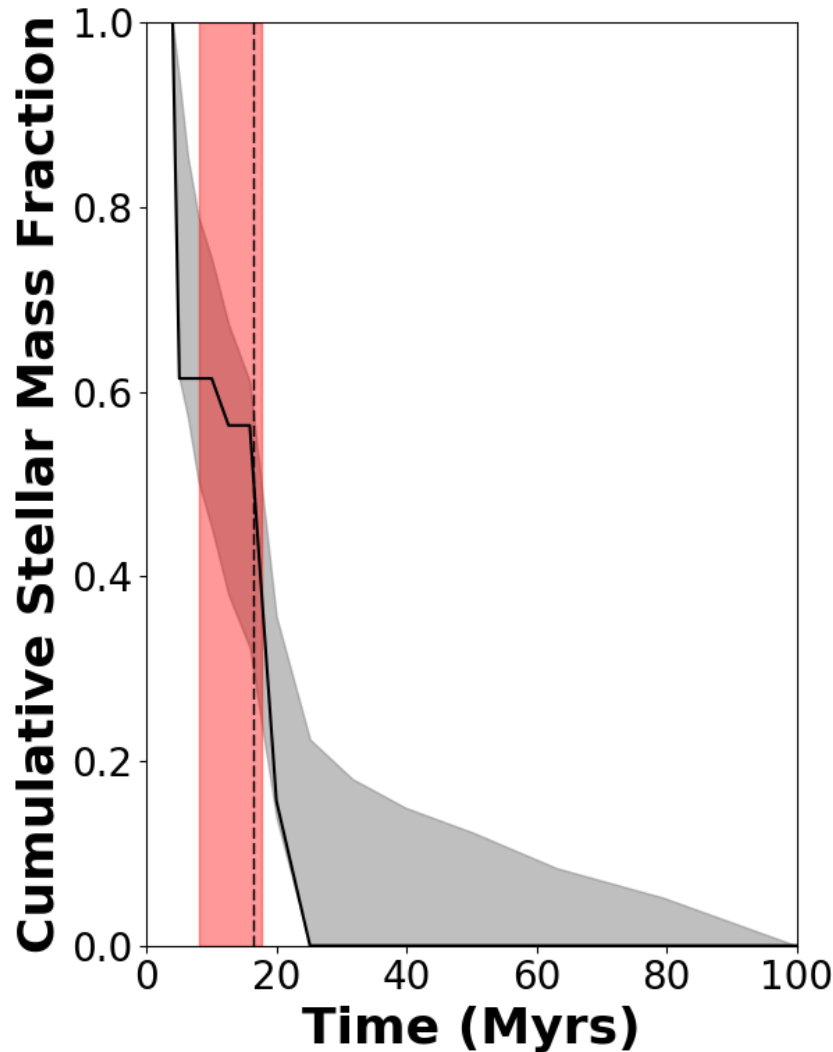


Conclusions & Future Work

- M33 hosts a population of *very young candidate HMXBs*
- Hint of bimodality in the age distribution
- Further source characterization w/ multi-wavelength data
- Full SED modeling of optical counterparts from forthcoming *HST* legacy survey



New Candidate HMXBs in M33



Foreground Eclipsing XRB?

