

Abstract Submitted
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A Chandra X-ray Visionary Project reveals the formation efficiency of high-mass X-ray binaries VALLIA ANTONIOU, Texas Tech University and Smithsonian Astrophysical Observatory, ANDREAS ZEZAS, University of Crete, Greece, JEREMY DRAKE, Smithsonian Astrophysical Observatory, SMC XVP COLLABORATION COLLABORATION — X-ray binaries (XRBs) are our main tool for studying the populations of compact objects in galaxies, and the formation and evolution of intermediate and higher mass binary stellar systems. Systematic studies of nearby galaxies have provided initial estimates of the formation rate of XRBs as a function of the star-formation rate (SFR) and stellar mass (M^*) of their host galaxies. A strong dependence of the XRB formation rate on age and metallicity has been predicted. The Small Magellanic Cloud (SMC) is the ideal target to study the dependence of the formation efficiency of XRBs on the age of their parent stellar population. In this talk, I will present our measurement of the formation efficiency of the SMC HMXB populations as a function of their age, the most detailed such measurement so far, using data from our deep Chandra X-ray Visionary Project. We find that the HMXB formation efficiency increases as a function of time (following a burst of star formation) up to ~ 40 -60 Myr, and then gradually decreases. The formation efficiency peaks at ~ 30 -40 Myr with average rates of $N(\text{HMXB})/\text{SFR} = 339^{+78}_{-83} (\text{Mo/yr})^{-1}$, and $N(\text{HMXB})/M^* = (8.74^{+1.0}_{-0.92}) \times 10^{-6} \text{Mo}^{-1}$, in good agreement with previous estimates of the average formation efficiency in the broad ~ 20 -60 Myr age range.

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