January 25, 2017
Astronomy Seminar

Neutron star radius measurements using quiescent LMXBs in globular clusters: progress and problems

Quiescent low-mass X-ray binaries (qLMXBs) in globular clusters offer a promising method to constrain the physics of the neutron star (NS) interior, as their atmospheres are relatively easy to model and the distances are well-measured. High-quality X- ray spectra of several cluster qLMXBs have been obtained with Chandra and/or XMM/Newton. Spectral fitting of these qLMXBs constrains the possible ranges of mass and radius of these NSs. I will show the merits and limitations of this technique, including questions about atmospheric composition, continuing accretion, the interstellar medium, hot spots, and independent constraints on the NS masses. I will discuss several different methods of combining measurements of different quiescent LMXBs; the assumptions used have significant effects on the final output. Finally, I will show results from new XMM observations of a quiescent LMXB in M13.