

Studying X-ray Binaries and Neutron Star Interiors through Globular Clusters

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Globular clusters are dense conglomerations of up to a few million stars. Their high density encourages interactions among stars, producing X-ray binaries, in which other stars transfer matter to extremely dense stars known as compact objects (black holes, neutron stars, or white dwarfs). We use observations at a variety of wavelengths (e.g. X-ray, ultraviolet, optical, radio) to identify the nature of these objects, and help us understand how they are formed. X-ray studies of hot neutron stars in globular clusters also give us the chance to constrain the radii of neutron stars, and thus their interior structure. This is of particular interest since the physics of very dense, cold matter (as in the heart of neutron stars) is very hard to calculate, and impossible to experimentally test on Earth.