The Discovery of two Luminous Low Mass X-ray Binaries in the Globular Cluster M15

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[Contributed talk, 15min.]

Abstract

A bright X-ray source 4U2127+119 has been long known in the globular cluster M15 and has been identified with the star AC211. This star shows an orbital period of 8.5 hr, both in the X-ray and optical light curves. The X-ray eclipse is partial, suggesting that the system is viewed close to the orbital plane and the central X-ray source is hidden behind the accretion disk, with X-rays scattered to the observer via an accretion disk coronae. However, a long standing puzzle was the detection by the Ginga satellite of a luminous X-ray burst that suggested the coronae was on occasions not present. We report a Chandra High Energy Transmission Grating observation of the globular cluster M15. The zero order image reveals two bright X-ray sources separated by $\sim$2.8 arc sec. This suggests there are two luminous low mass X-ray binaries (LMXBs) in this Globular Cluster. This is the first time that two LMXBs have been seen simultaneously active in a globular cluster. It is most likely that the X-ray burst observed by Ginga did not come from AC211, but rather from the newly discovered X-ray source. We discuss the properties of these two LMXBs and the consequences of this result for the overall X-ray binary population of globular clusters in other galaxies.

CATEGORY: BLACK HOLE AND NEUTRON STAR BINARIES