M15 and the nature of X2127+119

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Abstract

M15 is renowned for housing the high luminosity X-ray source X2127+119 which has been identified with by far the most luminous optical counterpart (the 15th mag blue variable AC211) of any galactic low-mass X-ray binary. Detailed photometric monitoring of X2127+119 showed that it had an orbital period of 17.11 hours. The broad eclipse feature seen in the optical light curve suggested that the source belonged to the accretion disk corona (ADC) class in which we were not viewing the X-ray source directly, thereby accounting for the high optical luminosity associated with an apparently faint X-ray source. However, this appeared to be dramatically disproved when Ginga observed an extremely luminous X-ray burst, suggesting that the X-ray source must be directly visible (at least for part of the time). The persistent low apparent X-ray luminosity was then attributed to a genuinely low accretion rate on the order of a percent of the Eddington rate, rather than being the result of scattering in an accretion disk corona, and indeed there are other comparable luminosity direct-viewed LMXBs in globular clusters. But note that they are optically much fainter and this leaves us with the optical brightness of AC211 to explain. One possibility to explain this discrepancy is the presence of a *second* LMXB in the core of M15 which could be responsible for the X-ray burst whilst leaving the ADC model for AC211 intact.

Our recent Chandra HRC-I observations do indeed show *two* sources residing at the center of M15, approximately 3" apart. In this poster, we report the results of the observations.

CATEGORY: BLACK HOLE AND NEUTRON STAR BINARIES