Bright X-Ray Sources in M31 Globular Clusters

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[Contributed talk, 15min.]

Abstract

We have conducted *Chandra* observations of ~ 900 square arcmin (~ 46 kpc^2) of M31, and find that the most luminous X-ray sources in most of our fields are in globular clusters (GCs). Of the 30 GC X-ray sources in our fields, 17 are newly discovered. Approximately 1/3 of all the sources have $L_x([0.5-7]\,keV) > 10^{37}$ ergs s^{-1}; approximately 1/10 of all the sources have $L_x([0.5-7]\,keV)$ close to or above 10^{38} ergs s^{-1}. The most luminous source, in the globular cluster Bo 375, is consistently observed to have L_x greater than 2×10^{38} ergs s^{-1}. In this talk we:
(1) describe the data,
(2) consider models that might apply to the highly luminous GC sources in M31: are the sources composites? are they accreting black holes? is the radiation beamed?
(3) explore the reasons why GCs in M31 house a population of X-ray sources that outshine those of our own Galaxy.
Our results on M31 GCs have implications that will help us to better model the processes that produce X-ray binaries in the GCs of our own and other galaxies. They suggest clues to the relationships between a galaxy's characteristics and history and the X-ray binary population of its GCs. In this sense, M31's GCs provide a bridge between the Milky Way's GC system and the GC systems of other galaxies.

CATEGORY: NORMAL GALAXIES