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Title: Ultraluminous X-ray Sources in Extragalactic Globular Clusters

Abstract: The question whether globular clusters host black holes has been of longstanding interest. This interest has grown dramatically with the LIGO detection of merging black holes, as black hole mergers formed in globular clusters is one of the leading explanations for these LIGO sources.

Determining whether black holes are common in globular clusters (GCs) has been an observational challenge. One of the most successful ways to identify candidate black holes in globular clusters is to identify globular cluster X-ray sources with very high luminosities that are much greater than the Eddington limit for neutron stars. A number of ultraluminous X-ray sources (ULXs) have been found within extragalactic globular clusters, and are candidate accreting black holes. We study spectral properties of GC ULXs over a large span of Chandra observations. We find that the globular cluster ULXs seem to follow one of two distinct trends: one group show a strong correlation between the accretion disk temperature and X-ray luminosity, while another group show no change in disk temperature with significant variations in X-ray luminosity. We discuss how these observational results impact our understanding of the nature of these sources and compare them to ULXs in star forming regions (very different environments than globular clusters) where a number have been shown to be NSs.