

Properties of X-ray Point Sources in Clusters of Galaxies

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ABSTRACT

Three nearby cluster of galaxies A2255, A194, A1060 have been analyzed for the X-ray point like source properties with XMM-Newton data. The cumulative log(N)-log(S) is calculated and compared with the blank field of Lockman Hole. A significant source-density excess (> 3σ) was found from the cluster regions. Correlation of X-ray to optical luminosity (Lx/LB) ratios is also studied. The optical observation of A2255 is performed by TUBITAK telescope RTT-150. The cluster galaxies are found to be brighter than the field compact galaxies. Based on the results we try to address the properties of galaxies in clusters and environmental influences of the WHIM on galactic nuclear activities.

Figure 1: Adaptively smooth XMM-Newton EPIC images







Figure 3: A2255 galaxies by TUBITAK-RTT150



Figure 4: L_x/L_B relation

significant (>3 σ) excess from cluster fields relative to L.Hole.



DISCUSSION

We analyzed three clusters of galaxies (figure-1) in x-ray and optical wavelengths. Log(N)-log(S) (figure-2) is derived. The cluster x-ray source fraction is calculated to be 3σ higher relative to the Lockman Hole at $F_x=1\times10^{-14}$ erg s⁻¹ limit. A2255 cluster is observed by RTT-150 optical telescope. 60% of the sources associated with a galaxy (figure-3). Based on the L_X/L_B relation (figure-4), about 30% of the whole sample can be explained by X-ray emission from unresolved LMXBs. There is a clear enhancement for cluster member galaxies. We suggest that AGN fuelling is induced, and inactive black holes are awaken in the ourskirts, whereas AGN activity is quenched in the cluster center.

This work is supported by Turkish Scientific & Technological Research Council (TUBITAK) by contract number 106T310. The authors also acknowledge the partial support by Bogazici University Research Foundation via code 06HB301.