[포GC-21] Chandra Archival Survey of Galaxy Clusters: X-ray Point Sources in Cool-core and Non-cool-core Clusters

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We have studied the physical properties of X-ray point sources in galaxy clusters using ~600 Chandra archival observations. The goal of this study is to investigate the density environmental effects on the physical properties of X-ray point sources by comparing the properties of X-ray point sources in galaxy clusters to those in typical blank fields. In this presentation, we show the nature of X-ray point sources which are expected to be related with galaxy clusters with different core properties. Using ~60 galaxy clusters observed with Chandra, we investigate the physical properties of X-ray point sources in cool-core and non-cool-core clusters. The cool-core clusters are known to have short central cooling time, and are characterized by low central entropy, systematic central temperature drops, and a brightest cluster galaxy at the X-ray peak. While the non-cool-core clusters have longer central cooling time, and are characterized by large central entropies and flat or centrally rising temperature profile. We show that how central core properties of galaxy clusters affect on the physical properties of X-ray point sources.

[포GC-22] Intergalactic Magnetic Field and Arrival Direction of Ultra-High-Energy Iron Nuclei

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We have studied how the intergalactic magnetic field (IGMF) affects the propagation of super-GZK iron nuclei that originate from extragalactic sources within the local GZK sphere. Toward this end, we set up hypothetical sources of ultra-high-energy cosmic-rays (UHECRs), virtual observers, and the magnetized cosmic web in a model universe constructed from cosmological structure formation simulations. We then arranged a set of reference objects at high density region to represent astronomical objects formed in the large scale structure (LSS). With our model IGMF, the paths of UHE iron nuclei are deflected on average by about 70 degrees, which might indicate a nearly isotropic distribution of arrival directions. However, the separation angle between the arrival directions and the nearest reference object on the LSS is only $<S>$~6 degrees, which is twice the mean distance to the nearest neighbors among the reference objects. This means that the positional correlation of observed UHE iron events with their true sources would be erased by the IGMF, but the correlation with the LSS itself is to be sustained. We discuss implications of our findings for correlations studies of real UHECR events.