[구GC-19] Properties of the mini-halos in dwarf ellipticals obtained from cosmological hydrodynamic simulations

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We have performed cosmological hydrodynamic simulations that include the effects of radiative heating/cooling, star formation, feedback by supernova explosions, and metallicity evolution. Our simulations cover a cubic box of a side length 4 Mpc/h with 130 million particles. The mass of each particle is 3.4×10^4 $M_{\odot}$, thus sub-galactic mini-halos can be resolved with more than hundred particles. Our simulation follows the whole formation process of the mini-halos ($M<10^7$ $M_{\odot}$) around dwarf galaxies. We discuss various properties of the mini halos such as mass function, specific frequency, baryon-to-dark matter ratio, metallicity, spatial distribution, and orbit eccentricity distribution as functions of redshift and host galaxy mass. We also discuss how the formation and evolution of the mini halos are affected by the epoch of the reionization.

[구GC-20] Chandra Archival Survey of Galaxy Clusters: Surface Photometry of Diffuse X-ray Emission

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We have studied the physical properties of X-ray point sources in galaxy clusters for years based on the archival observations using the most sophisticated space X-ray observatory, Chandra X-ray Observatory. Because the ultimate goal of the study is comparing the physical properties of X-ray point sources found in galaxy clusters to those in X-ray blank fields; blank fields are the regions in the sky where any noticeable cosmic diffuse X-ray emission is not observed, an important key issue regarding this study is picking out the point sources related with galaxy clusters. However we do not have red-shift information of all the X-ray point sources. Therefore as a first order approximation we will consider the point sources with smaller projected cluster-centric distance than the adopted size of galaxy clusters. As a first step of this study we perform X-ray surface photometry of ~600 galaxy clusters based on ~800 Chandra ACIS observations. We carefully investigate the radial structures of diffuse X-ray emission in 3 different energy bands. Based on the highly accurate surface photometry we determine the characteristic size of diffuse X-ray emission (i.e., the boundary of X-ray emission). We also investigate the cosmological evolution of this characteristic size of galaxy clusters. General discussion regarding the two dimensional morphology of galaxy clusters will be presented.