~~themselves trace group-like halos. Here we test this hierarchical picture, presenting deep, wide-field Lyα narrowband imaging of a 1°×0.5° region around a LAB pair at z = 2.3 discovered previously by a blind survey. We find 183 Lyα emitters, including the original LAB pair and three new LABs with Lyα luminosities of (0.9–1.3)×10^43 erg s^−1 and isophotal areas of 16–24 arcsec^2. Using the LAEs as tracers and a new kernel density estimation method, we discover a large-scale overdensity (Boötes J1430+3522) with a surface density contrast of δ(Σ) = 2.7, a volume density contrast of δ ~ 10.4, and a projected diameter of ~20 comoving Mpc. Comparing with cosmological simulations, we conclude that this LAE overdensity will evolve into a present-day Coma-like cluster with log(M/M⊙) ~ 15.1±0.2. In this and three other wide-field LAE surveys re-analyzed here, the extents and peak amplitudes of the largest LAE overdensities are similar, not increasing with survey size, implying that they were indeed the largest structures then and do evolve into rich clusters today. Intriguingly, LABs favor the outskirts of the densest LAE concentrations, i.e., intermediate LAE overdensities of δ(Σ) = 1 – 2. We speculate that these LABs mark infalling proto-groups being accreted by the more massive protocluster.~~

[구 GC-07] Merging Galaxy Cluster Abell 115: Weak Lensing with Subaru Observation

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We present weak-lensing analysis of the merging galaxy cluster Abell 115 at z=0.197 based on Subaru i and V band images. As merging clusters often show, Abell 115's merging signatures include radio relics, double X-ray peaks, and large offsets between the cluster member galaxies and the X-ray distributions. A weak-lensing study provides underlying dark matter distribution, the key information to determine the complex merging scenario of the cluster. In this work, we present 2D mass reconstruction of the cluster, which reveals two distinct mass peaks consistent with galaxy distributions. We measure the first weak-lensing mass of each subcluster. Our weak-lensing total mass estimate is a few factors lower than the published dynamical mass obtained from velocity dispersion. This large mass discrepancy may be attributed to a significant departure from dynamical equilibrium. We also re-analyze the archival chandra data and find that the result is consistent with weak-lensing mass.

[구 GC-08] Mapping the Mass of the Double Radio Relic Merging Galaxy Cluster PLCK G287+32.9: A Subaru and HST Weak-lensing Analysis

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Discovered as the second highest S/N detection of the Planck SZ survey, PLCK G287.0+32.9 is a massive galaxy cluster that belongs to a rare collection of merging clusters that exhibit two radio relics and a radio halo. A feature that makes this cluster even more unique is the separation of the radio relics with one ~ 400 kpc to the north-west of the X-ray peak and the other ~ 2.8 Mpc to the south-east. This asymmetric configuration requires a complex merging scenario. A key to gaining insight into the events that caused the formation of the merging features is to understand the dark matter mass distribution. Using a weak-lensing technique on deep Subaru and Hubble Space Telescope observations, we map the dark matter mass distribution of PLCK G287.0+32.9. Our investigation detects five significant mass structures. The mass is dominated by a primary structure that is centered near the X-ray peak of the intracluster medium. Four lesser mass structures are detected with two located within $\sim 1\arcmin$ of the primary mass structure, a third to the north-west, and a fourth near the south-east radio relic. Along with these detections, we estimate the mass of each structure and relate their distributions to the intracluster medium and galaxy distributions. In addition, we discuss the relation of the mass structures to the formation of the relics and plausible merging scenarios.

[구 GC-09] Weak Lensing Analysis of the Two High-z Massive Clusters, SPT-CL J0205-5829 and MOO1014+0038, with HST Observations

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The mass function of massive high-z clusters is extremely sensitive to the cosmological parameters. However, it is challenging to estimate their

accurate masses. The "See Change" HST programme offers a rare opportunity to measure them using weak gravitational lensing. In this talk, we study SPT-CL J0205-5829 (z=1.322) and MOO1014+0038 (z=1.24) discovered in the SPT-SZ survey and MaDCoW Survey, respectively. We perform weak lensing analysis with the Advanced Camera for Surveys (ACS) and Wide Field Camera 3 (WFC3) images by carefully taking into account the instrumental effect. We successfully detect weak lensing signals which produce cluster masses consistent with those from non-lensing methods based on hydrostatic equilibrium.

[구 GC-10] A redshift survey of the nearby galaxy cluster Abell 2199: comparison of the spatial and kinematic distributions of galaxies and intracluster medium

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We present the results from an extensive spectroscopic survey of the central region of the nearby galaxy cluster Abell 2199 (A2199) at z=0.03. By combining 775 new redshifts from the MMT/Hectospec observations with the data in the literature, we construct a large sample of 1624 galaxies with measured redshifts at R<30', which redsults in high spectroscopic completeness at $r_{petro,0}$<20.5 (77%). We use these data to study the kinematics and clustering of galaxies, focusing on the comparison with those of the intracluster medium (ICM) from Suzaku X-ray observations. We identify 406 member galaxies of A2199 at R<30' using the caustic technique. The velocity dispersion profile of cluster members appears smoothly connected to the stellar velocity dispersion profile of the cD galaxy. The luminosity function is well fitted with a Schechter function at M_r<-15. The radial velocities of cluster galaxies generally agree well with those of the ICM, but there are some regions where the velocity difference between the two is about a few hundred kilometers per second. The cluster galaxies show a hint of global rotation at R<5' with v_{rot}=300-600 km s^{-1}, but the ICM in the same region does not show such rotation. We apply a friends-of-friends algorithm to the cluster galaxy sample at R<60' and identify 32 group candidates, and examine the spatial correlation between the galaxy groups and X-ray emission. This extensive survey in the central region of A2199 provides an important basis for future studies of interplay among the galaxies, the ICM, and the dark matter in the cluster.

[박 GC-11] Near-IR Polarization of the Northeastern Region of the Large Magellanic Cloud

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The Large Magellanic Cloud (LMC) is a unique target to study the detail structures of molecular clouds and star-forming regions, due to its proximity and face-on orientation from us. Most part of the astrophysical subjects for the LMC have been investigated, but the magnetic field is still veiling despite its role in the evolution of the interstellar medium (ISM) and in the main force to influence the star formation process. Measuring polarization of the background stars behind interstellar medium allows us to describe the existence of magnetic fields through the polarization vector map.

In this presentation, I introduce the near-infrared polarimetric results for the 39′X69′ field of the northeastern region of the LMC and the N159/N160 star-forming complex therein. The polarimetric observations were conducted at IRSF/SIRPOL 1.4 m telescope. These results allow us to examine both the global geometry of the large-scale magnetic field in the northeastern region and the close structure of the magnetic field in the complex. Prominent patterns of polarization vectors mainly follow dust emission features in the mid-infrared bands, which imply that the large-scale magnetic fields are highly involved in the structure of the dust cloud in the LMC. In addition, local magnetic field structures in the N159/N160 star-forming complex are investigated with the comparison between polarization vectors and molecular cloud emissions, suggesting that the magnetic fields are resulted from the sequential formation history of this complex. I propose that ionizing radiation from massive stellar clusters and the expanding bubble of the ionized gas and dust in this complex probably affect the nascent magnetic field structure.