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 $(0.9-1.3)\times10^{43}$ 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 $\delta(\Sigma) = 2.7$, a volume density contrast of $\delta \sim 10.4$, 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 $\log(M/M_\odot) \sim 15.1\pm0.2$. 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 $\delta(\Sigma) = 1 - 2$. 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

Mincheol Kim, Myungkook J. Jee
Yonsei University

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

Kyle Finner[1], Myungkook James Jee[1], William Dawson[4], Nathan Golovich[2], Daniel Gruen[3], Brian Lemaux[2], David Wittman[2]
[1]Yonsei University,
[2]UCDavis,[3]StanfordUniversity,[4]LawrenceLivermoreNationalLab

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

Seojin F. Kim and Myungkook J. Jee
Yonsei University

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