lensing analysis of SPT-CL J0205-5829 using HST data. Our analysis produces a mass estimate consistent with the previous results obtained from non-lensing methods.

In this poster, we describe details of the method including shape measurement, PSF correction, source selection, and mass estimation. We also present a two-dimensional mass map and compare this to the galaxy distribution.

[포 GC-09] Weak Lensing Analysis On The Merging Galaxy Cluster Abell 115

Mincheol Kim, Myungkook J. Jee
Yonsei University

The galaxy cluster Abell 115 shows ongoing merger features, which suggest that it might be in an intermediate phase of dynamical evolution. As merging clusters often show, the characteristic hints of A115's merging activities include radio relics, double X-ray peaks, and large offsets between the cluster member galaxies and the X-ray distributions. To constrain the exact stage of the merger, it is necessary to obtain its dark matter distribution. In this study, we carry out a precision weak lensing study of this interesting system based on Subaru images. We present our mass reconstruction together with descriptions on our core procedure of the analysis: Subaru data reduction, galaxy shape measurement, and source selection. We find that Abell 115 consists of two massive dark matter clumps, which closely follow the cluster galaxies. Our weak lensing 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.

[포 GC-10] Where is the Dark Matter in the Double Radio Relic Galaxy Cluster PLCKG287.0+32.9?

Kyle Finner[1]; Myungkook J. Jee[1], William Dawson[4], Nathan Golovich[2], Daniel Gruen[3], Brian Lemaux[2], David Wittman[2]
[1]Yonsei University, [2]UC Davis, [3]Stanford University, [4]Lawrence Livermore National Lab

Diffuse radio relics are often detected in merging galaxy clusters and are emitted by synchrotron process. Radio relics are believed to trace the shock waves in the intracluster medium induced by ram pressure during a major cluster merger. Radio halos and relics are found in approximately 50 galaxy clusters to date that are all in a state of merging. The rarest of these galaxy clusters contain pairs of relics of similar brightness as well as a radio halo. The massive galaxy cluster PLCKG287.0+32.9 belongs to this rare population and is the second most significant detection from the Planck SZ All-sky Survey. Perhaps even more intriguing is that the radio relics are observed at vastly different distances from the X-ray peak requiring a complex merging scenario. In this study, we use weak-lensing to peer deeper into the merging scenario by reconstructing the dark matter distribution. We relate the mass distribution to the radio, X-ray, and optical emissions to provide constraints for future simulations of the merger. Fitting an NFW profile to the tangential shear we infer the mass of the cluster and discuss its implications for the merging scenario.

[포 GC-11] IONIZED GAS KINEMATICS ALONG THE RADIO JET IN TYPE 2 AGNS

HUYNH ANH N. LE, JONG-HAK WOO, AND DONGHOON SON
Astronomy Program, Department of Physics and Astronomy, Seoul National University

To investigate the connection between radio activity and AGN outflows, we present a study of ionized gas kinematics by using [O III] λ5007 emission line along the radio jet for six radio AGNs. These AGNs are selected based on the radioactivity ($L_{1.4GHz} \geq 1039.8$ erg s-1) as well as optical properties as type 2 AGNs. By using the high spatial resolution of the Red Channel Cross Dispersed Echellette Spectrograph at the Multiple Mirror Telescope, we investigate in detail the [O III] and stellar kinematics. We spatially resolve and probe the central AGN-photoionization sizes, which is important in understanding the structures and evolutions of galaxies. We find that the typical central AGN-photoionization sizes of our targets are in range of 1.8-3.8 kpc. We study the [O III] kinematics along the radio jets to test whether there is a link between gas outflows in the narrow-line region and radio jet emissions. Contrary to our expectation, we find no evidence that the gas outflows are directly connected to radio jet emission.

[포 GC-12] The evolution of a late-type galaxy through multiple high-speed galaxy-galaxy collisions

Jeong-Sun Hwang[1], Changbom Park[2]
[1]Department of Physics and Astronomy, Sejong University, [2]School of Physics, Korea Institute for Advanced Study

We perform hydrodynamical simulations of a late-type galaxy experiencing frequent high-speed encounters with intruding galaxies, called "galaxy harassment". Specifically, we simulate a Milky Way-like galaxy colliding consecutively with six twice-massive early-type galaxies containing hot diffuse gas on their halos, with various impact parameters ranging from 65 kpc/h to 15 kpc/h at the relative speed of about 1500 km/s. We show that galaxy-galaxy encounters play a significant role in a cluster environment in gas stripping and star formation quenching through hydrodynamic interactions of late-type galaxies with cluster early-type galaxies.

[포 GC-13] A pilot study on the formation and evolution of the Intracluster light: Preliminary results of the Coma cluster

Jaewon Yoo[1,2], Jongwan Ko[1,2]
[1]Korea Astronomy and Space Science Institute (KASI), [2]University of Science and Technology (UST)

Galaxy clusters are the most massive gravitationally bound systems and thus probably the most recent objects to form. One of promising routes to understand the assembly history of galaxy clusters is to measure observable quantities of components in clusters that are sensitive to the evolutionary state of the cluster.

Recent deep observations on the nearby clusters show distinct diffuse intracluster light (ICL), that the light from stars are not bound any individual cluster galaxy, however until now this component has not been well studied due to its faint nature, with typical brightness of ~100 times fainter than the sky background.

As shown in galaxy cluster simulation studies, the ICL abundance increases during various dynamical exchanges of galaxies such as the disruption of dwarf galaxies, major mergers between galaxies and the tidal stripping of galaxies. Thus, the ICL is an effective tool to measure the evolutionary stage of galaxy clusters. Moreover, the investigation of the ICL evolution mechanism will allow us understand the galaxy evolution process therein.

In this pilot study, we target the Coma cluster, where the existing ICL studies are limited only in the central region. With large and uniform deep optical images from the Subaru telescope, available only recently (Okabe et al. 2014), we are developing a robust ICL measurement technique, extracting the ICL surface brightness and color profiles, which will allow us to study the origin of the ICL and its connection to the evolutionary history of the Coma cluster.

For the next phase, we plan to utilize the plenty of spectroscopy data from the MMT telescope to compare ICL properties with the star formation history of the brightest cluster galaxies (BCG), and discuss the ICL formation mechanism of the Coma cluster by comparing the distribution of cluster galaxies with the distribution of diffuse light inside the Coma cluster.

우주론 / 암흑물질, 에너지

[포 CD-01] Post-reionization Kinetic Sunyaev-Zel'dovich Effect in Illustris Simulation

Hyunbae Park[1], Cristiano Sabiu[1], Xiao-dong Li[2], Changbom Park[2], Juhan Kim[2]
[1]Korea Astronomy and Space science Institute, [2]Korea Institute for Advanced Study

We develop a methodology to use the redshift dependence of the galaxy 2-point correlation function (2pCF) as a probe of cosmological parameters. The positions of galaxies in comoving Cartesian space varies under different cosmological parameter choices, inducing a redshift-dependent scaling in the galaxy distribution. This geometrical distortion can be observed as a redshift-dependent rescaling in the measured 2pCF. The shape of the 2pCF exhibits a significant redshift evolution when the galaxy sample is analyzed under a cosmology differing from the true, simulated one. Other contributions, including the gravitational growth of structure, galaxy bias, and the redshift space distortions, do not produce large redshift evolution in the shape. We show that one can make use of this geometrical distortion to constrain the values of cosmological parameters governing the expansion history of the universe. This method could be applicable to future large scale structure surveys, especially photometric surveys such as DES, LSST, to derive tight cosmological constraints. This work is a continuation of our previous works as a strategy to constrain cosmological parameters