In studying the dynamical evolution of galaxy clusters, one intriguing approach is to compare the spatial distributions of various components, such as the dark matter, the member galaxies, the gas, and the intracluster light (ICL; the diffuse light from stars, which are not bound any individual cluster galaxy). If we find a visible component whose spatial distribution coincides with the dark matter distribution, then we could draw a dark matter map without requiring laborious weak lensing analysis. Furthermore, if the component traces the dark matter distribution better for more relaxed galaxy cluster, we could use the similarity as a dynamical stage estimator of the galaxy cluster. We present a novel new methodology to quantify the similarity of two or more 2-dimensional spatial distributions. We apply the method to a sample of galaxy clusters at different dynamical stages simulated within N-cluster Run, which is an N-body simulation using the galaxy replacement technique. Among the various components (stellar particles, galaxies, ICL), the velocity defined ICL+ brightest cluster galaxy (BCG) component traces the dark matter best. Between the sample galaxy clusters, the relaxed clusters show stronger similarity of the spatial distribution between the dark matter and ICL+BCG than the dynamically young clusters.

[포 GC-03] Large Scale Structures at z~1 in SA22 Field and Environmental Dependence of Galaxy Properties

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We study galaxy evolution with the large-scale environment with confirmed galaxy clusters from multi-object spectroscopy (MOS) observation. The observation was performed with Inamori Magellan Areal Camera and Spectrograph (IMACS) mounted on the 6.5 m Magellan/Baade telescope in Las Campanas Observatory. With the MOS observation, we spectroscopically confirm 34 galaxy clusters, including three galaxy clusters discovered in Kim et al. (2016) and 11 of them have halo mass of > $10^{14.5}$ $M_\odot$. Among the confirmed clusters, 12 galaxy clusters are part of large-scale structure at z ~ 0.9, and their size stretches to 40 Mpc co-moving scale. In this study, we checked the 'web feeding model,' which postulates that more linked (with their environment) galaxy clusters have less quenched populations by investigating the correlation between properties of confirmed galaxy clusters and the large-scale structure environment. Lastly, we found that galaxy clusters that make up the large-scale structure have larger and widely spread values of total star formation density ($\Sigma SFR/M_{halo}$) than typical clusters at similar redshifts.

[포 GC-04] Discovery of Massive Galaxy Cluster Candidates in the Southern Sky

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Galaxy clusters are the largest structures in the universe located at the top of the cosmological hierarchical model, so the evolution of the universe can be understood by studying clusters of galaxies. Therefore, finding a larger number of galaxy clusters plays an important role in exploring how the universe evolves. A large number of catalogs for galaxy clusters in the northern sky have been published; however, there are few catalogs in the southern sky due to the lack of wide sky survey data. KMTNet Synoptic Survey of Southern Sky(KS4) project, which observes a wide area of the southern sky about 7000 deg^2 with KMTNet telescopes for two years, is in progress under the SNU Astronomy Research Center. We use the KS4 multi-wavelength optical data and measure photometric redshifts of galaxies for finding galaxy clusters at redshift z<1. Currently, the KS4 project has observed approximately 50% of the target region, and a pipeline that measures photometric redshifts of galaxies has been created. When the project is completed, we expect to find more than a hundred thousand galaxy clusters, and this will improve the study of galaxy clusters in the southern sky.

[포 GC-05] HI superprofiles of galaxies from THINGS and LITTLE THINGS

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We present a novel profile stacking technique based on optimal profile decomposition of a 3D spectral line data cube, and its performance test using the HI data cubes of sample galaxies from HI galaxy surveys, THINGS and LITTLE THINGS. Compared to the previous approach which aligns all the spectra of a cube using their central velocities derived from either moment analysis, single Gaussian or hermite h3 polynomial fitting, the new method makes a profile decomposition of the profiles from which an optimal number of single Gaussian components is derived for each profile. The so-called superprofile which is derived by co-adding all the aligned profiles from which the other Gaussian models are subtracted is found to have weaker wings compared to the ones constructed in a typical manner. This could be due to the reduced number of asymmetric profiles in the new method. A practical test made on the HI data cubes of the THINGS and LITTLE THINGS galaxies shows that our new method can extract more mass of kinematically cold HI components in the galaxies than the previous results. Additionally, we fit a double Gaussian model to the superprofiles whose S/N is boosted, and quantify not only their profile shapes but derive the ratio of the Gaussian model parameters, such as the intensity ratio and velocity dispersion ratio of the narrower and broader Gaussian components. We discuss how the superprofile properties of the sample galaxies are correlated with their other physical properties, including star formation rate, stellar mass, metallicity, and gas mass.

[포 GC-06] HI gas properties of BAT-BASS AGN host galaxies

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We present preliminary results of theㅇ VLA archival HI data of local AGN hosts. The sample consists of the galaxies selected from the Swift-BAT hard X-ray survey. The main goal is to probe the gas environment of the sample in order to verify the role of gas accretion as one of the major AGN triggering mechanisms. HI, as a mostly diffuse and extended gas component in many galaxies, is a sensitive tracer to explore the impact of the surroundings on galaxies. In this work, we therefore probe the HI imaging data of a subsample of BAT-BASS AGN hosts, starting with the cases for which relatively high HI fluxes have been reported from the past single-dish observations. Based on their resolved HI properties, we will discuss the possibility of gas accretion and its role in powering AGNs in these examples.

[포 GC-07] Compact Elliptical Galaxies Hosting Active Galactic Nuclei in Isolated Environments

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We present the discovery of rare active galactic nuclei (AGNs) in nearby ($z<0.05$) compact elliptical galaxies (cEs) located in isolated environments. Using spectroscopic data from the Sloan Digital Sky Survey (SDSS) Data Release 12, four AGNs were identified based on the optical emission-line diagnostic diagram. SDSS optical spectra of AGNs show the presence of distinct narrow-line emissions. Utilizing the black hole (BH) mass-stellar velocity dispersion scaling relation and the correlation between the narrow L([OIII])/L(Hβ) line ratio and the width of the broad Hα emission line, we estimated the BH masses of the cEs to be in the range of 7×10^5–8×10^7 solar mass. The observed surface brightness profiles of the cEs were fitted with a double Sérsic function using the Dark Energy Camera Legacy Survey r-band imaging data. Assuming the inner component as the bulge, the K-band bulge luminosity was also estimated from the corresponding Two Micron All Sky Survey images. We found that our cEs follow the observed BH mass-stellar velocity dispersion and BH mass-bulge luminosity scaling relations, albeit there was a large uncertainty in the derived BH mass of one cE. In view of the observational properties of BHs and those of the stellar populations of cEs, we discuss the proposition that cEs in isolated environments are bona fide low-mass early-type galaxies (i.e., a nature origin).

[포 GC-08] Star-forming Dwarf Galaxies in Filamentary Structures around the Virgo Cluster

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We present the chemical properties of star-forming dwarf galaxies (SFDGs) in five filamentary structures (Leo II A, Leo II B, Leo