

galaxies for each VIVA galaxies utilizing kinematic data from Extended Virgo Cluster Catalog. Assuming that neighbor galaxies share similar levels of environmental effects with host VIVA galaxies, we investigate environmental effects on galaxy properties in different subgroups using SDSS optical and GALEX ultraviolet photometric data. We find that dwarf neighbor galaxies in first and second groups show rapid quenching of their star formation (SF), while massive counterparts are still in SF activity. On the other hand, most third group galaxies show hints of SF activity regardless of their mass. We conclude that SF and evolution of galaxy in the cluster environment is closely linked to ICM-ISM interactions and dwarf galaxies seem to be more sensitive to this effect compared to massive counterparts.

[포 GC-04] Raman scattering Wings of Hydrogen in Active Galactic Nuclei.

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Active galactic nuclei (AGNs) are powered by a supermassive black hole with an accretion disk and exhibit prominent broad and narrow emission lines. The unification model AGNs requires the presence of a geometrically and optically thick torus component that hides the broad line region from observers lying in the equatorial direction. The strong far UV radiation characterizing AGN spectra is expected to be scattered inelastically in the torus region to reappear around hydrogen Balmer lines or Paschen lines in the form of broad wings. Adopting a Monte Carlo technique we produce broad wings around H α , H β and Pa α that are formed through Raman scattering. The widths of the wings are mainly affected by the neutral column density of the torus, and the overall strengths are primarily determined by the covering factor and the column density of the neutral region. It is concluded that deep spectroscopy of AGNs of broad wings around hydrogen emission lines may shed much light on the AGN unification model.

[포 GC-05] A Cluster, Group, and Subgroup Catalog Using SDSS DR12

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Galaxy Clusters with complex inner structures are excellent laboratories with which to study the properties of galaxies and the groups of galaxies in them. To execute a systematic search for flux-limited galaxy groups and clusters based on the spectroscopic galaxies with $r < 17.77$ of SDSS data release 12, we adopt a modified version of the friends-of-friends algorithm, whereupon a total of 3272 galaxy groups and clusters with at least 10 members are found. In this study, we aim to assign galaxy subgroups within groups and clusters that enable us to investigate the detained star-formation history of galaxies by applying a modified hierarchical grouping method to our galaxy group and cluster catalog. We note that roughly 70% of our galaxy groups and clusters have subgroups. The most remarkable additional results are as follows. The brightest cluster galaxies (BCGs) have brighter luminosities with larger velocity dispersions of groups and clusters. The BCGs are concentrated toward the most massive subgroups than the second and third one. This result implies that the galaxy properties can be affected by different merger and star-formation histories for differing environments.

[포 GC-06] On the two different sequences of the mass-size relation for early-type galaxies

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Scaling relations of early-type galaxies (ETG) provide a deep insight into their formation and evolution. Interestingly enough, most relations extending into the dwarf regimes display non-linear or broken-linear features, unlike the linear relations for normal (i.e., intermediate-mass to giant) ETGs only. Here we investigate the mass-size scaling relation of ETGs using a massive database of galaxies from SDSS DR12. We divide ETGs into two groups by the indication of star formation such as colors, and examine their distinction along the mass-size relation. We find that the mass-size distribution of blue, young normal galaxies is in good agreement with that of

dwarf ETGs. Our result suggests that blue, young normal ETGs may serve as links between (passive) normal ETGs and dwarfs. We discuss the possibility of blue, young ETGs being progenitors of dwarf ETGs.

[발표취소] Star formation in overdense region around $z=1.44$ radio galaxy 6CE 1100+3505

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Star formation in galaxies that lie in dense environment tends to increase as the redshift of the cluster increases. At $z \sim 1.4$, the situation turns to be complex; some clusters still harbor galaxies with vigorous star formation, and others are populated with relatively old, massive galaxies. We present the result from narrow-band photometric study of the fields around the radio galaxy 6CE 1100+3505 at $z=1.44$. Deep H- and H-narrow band data have been obtained using CFHT/WIRCAM which cover the corresponding wavelengths for redshifted H α . While the number of IRAC 3.6, and 4.5 μ m selected sources show clear excess within the central ~ 1 Mpc area from the radio galaxy, number of galaxies identified to show excess in H-narrow band is very small. We discuss the possible integrated star formation rate in this overdense structure, and the implication to the evolution of cosmic star formation rate as a function of environment.

[포 GC-08] Discovery of high redshift galaxy clusters and superclusters and study of star formation-density relation

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Galaxy cluster is the most important laboratory to study the effect of environment on galaxies, one of key questions in astronomy. In the local universe, it is well known that red, passive galaxies are concentrated in the cluster core. However, it is still controversial whether the star formation-density relation at the low redshift is retained in the distant universe.

Many surveys have tried to find galaxy clusters at various epochs. However the optical dataset has limitations in finding galaxy clusters at $z > 1$, since the bulk of stellar emission of $z > 1$ galaxies is redshifted into the near-IR regime. We used the multi-wavelength data from the UKIDSS DXS (J and K bands), the SWIRE (4 IRAC bands), and the PAN-STARRS (g, r, i, z, y bands) and IMS (J band; Im et al. 2015, in preparation) in the European Large Area ISO Survey North1 (ELAIS-N1) field to search for high redshift galaxy clusters and study the properties of member galaxies.

Using the multi-wavelength data, we investigated overdensities of galaxies at $0.2 < z < 1.6$ based on the photometric redshift information. We found several superclusters where cluster candidates are concentrated within scales of few tens of Mpc at $z \sim 0.9$. Interestingly, some of the supercluster candidates consist of galaxy clusters which are dominated by blue galaxies. We will present high redshift galaxy cluster and supercluster candidates in ELAIS-N1 field and galaxy properties in different environments including dense clusters and fields.

[포 GC-09] Stellar and Ionized Gas Kinematics of Blue-cored Early-type Dwarf Galaxies in the Virgo Cluster

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Early-type dwarf galaxy (ETDG), the most abundant galaxy type in clusters, were recently shown to exhibit a wide variety in their properties. Particularly, the presence of blue cores in some ETDGs supports the scenario of late-type galaxy infall and subsequent transformation into red, quiescent ETDGs. While several transformation mechanisms for these ETDGs with blue core within cluster environment have been proposed, all these processes are able to explain only some of the observational properties of ETDGs such as stellar populations and structural parameters. In this context, internal kinematic properties of blue-cored ETDGs provide the most crucial evidence to discriminate different processes for the formation of these galaxies. We present a kinematic analysis of two blue-cored ETDGs in the Virgo cluster based on long-slit data obtained from Gemini Multi-Object Spectrographs (GMOS) observations. We find that the observed galaxies show kinematically decoupled sub-components in the velocity profile such as discontinuity or counter-rotating component. We discuss possible