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.

Seok-Jun Chang[1], Jeong-Eun Heo[1], Francesco Di Mille[2], Rodolfo Angeloni[3], Tali Palma[4,5], Chae-Lin Hong[1] and Hee-Won Lee[1]
[1]Department of Physics and Astronomy, Sejong University, Korea, [2]Las Campanas Observatory, Chile,[3]AURA-GEMINI Observatory, Chile,
[4]Millennium Institute of Astrophysics, Chile,
[5]Pontificia Universidad Catolica de Chile, Chile

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 Hα, Hβ and Paα 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

Youngdae Lee[1,2], Hyunjin Jeong[2], Jongwan Ko[2], Joon Hyeop Lee[2], Jong Chul Lee[2], Hye-Ran Lee[2,3], Yujin Yang[2], and Soo-Chang Rey[1]
[1]Department of Astronomy and Space Science, Chungnam National University (CNU)
[2]Korea Astronomy and Space Science Institute (KASI)
3Korea University of Science and Technology (UST)

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

Jin-Ah Kim and Suk-Jin Yoon
Department of Astronomy and Center for Galaxy Evolution Research, Yonsei University

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