hydrodynamical simulations, we investigate where simulated galaxies fall in phase space. We find the galaxies with different cluster infall times often separate cleanly in phase space. We also investigate how a galaxy's location in phase space is correlated with its tidal mass loss, and ram pressure stripping. By comparing our simulated cluster galaxies to observed cluster galaxies, we show how phase space diagrams are essential tools for understanding environmental effects acting on cluster galaxies.

[박 GC-11] Study of galaxies in extensive area of the Virgo cluster

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Nearby galaxy clusters and their surrounding regions represent the current endpoint of evolution galaxy cluster evolution. We present a new catalog of 1589 galaxies, what we call Extended Virgo Cluster Catalog (EVCC), in wider area of the Virgo cluster based on the Sloan Digital Sky Survey (SDSS) Data Release 7. The EVCC covers an area 5.2 times larger than the footprint of the classical Virgo Cluster Catalog, and reaches out to 3.5 times the virial radius of the Virgo cluster. The EVCC contains fundamental information such as membership, morphology, and photometric parameters of galaxies. The EVCC defines a comprehensive galaxy sample covering a wider range in galaxy density that is significantly different from the inner region of the Virgo cluster. It will be the foundation for forthcoming galaxy evolution studies in the extended Virgo cluster region, complementing ongoing and planned Virgo cluster surveys at various wavelengths. We also present the large scale structures in the field around the Virgo cluster. We identified seven galaxy filaments and one possible sheet in three dimensions of super-galactic coordinates based on the HyperLEDA database. By examining spatial distribution and Hubble diagram of galaxies, we found that six filaments are directly associated with the main body of the Virgo cluster. On the other hand, one filament and one sheet are structures located at background of the main body of Virgo cluster. The EVCC and the filament structures will be the foundation for forthcoming studies of galaxy evolution in various environments as well as buildup of the galaxy cluster at z ~ 0, complementing ongoing and planned Virgo cluster surveys at various wavelengths.

[구 GC-12] Systemic search for gas outflows in AGNs and star-forming galaxies

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We present a census of AGN-driven gas outflows based on the kinematics of ionized gas and stars, using a large sample of ~11,000 emission line galaxies at z < 0.3, selected from SDSS. First, a broad correlation between gas and stellar velocity dispersions indicates that the bulge gravitational potential plays a main role in determining the ionized gas kinematics. However, the velocity dispersion of the [OIII] emission line is larger than stellar velocity dispersion by a factor of 1.3-1.4, suggesting that the non-gravitational (non-virial) component, i.e., outflows, is almost comparable to the gravitational component. Second, gas-to-stellar velocity dispersion ratio increases with both AGN luminosity and Eddington ratio, suggesting that non-gravitational kinematics are clearly linked to AGN accretion. The distribution in the [OIII] velocity - velocity dispersion diagram dramatically expands toward large values with increasing AGN luminosity, implying that the launching velocity of gas outflows increases with AGN luminosity. Third, the fraction of AGNs with a signature of the non-gravitational kinematics, steeply increases with AGN luminosity and Eddington ratio, while the majority of luminous AGNs presents the non-gravitational kinematics in the [OIII] profile. These results suggest that ionized gas outflows are prevalent among type 2 AGNs. On the other hand, we find no strong trend of the [OIII] kinematics with radio luminosity, once we remove the effect of the bulge gravitational potential, indicating that ionized gas outflows are not directly related to radio activity for the majority of type 2 AGNs. We will discuss the implication of these results for AGN feedback in the local universe.

[구 GC-13] Bar effects on the central SF and AGN activities in the SDSS galaxy sample