

evolves, the bar becomes longer and the light deficit becomes more pronounced. Theoretical studies have predicted that bars evolve by capturing nearby disk stars and employing them to make the bar more elongated and stronger. Therefore the light deficit in the disk is likely produced by bars, and thus bars play a major role in shaping their host galaxies, redistributing not only the gaseous but also the stellar mass within galaxies, with important consequences to their subsequent evolution.

[포 GC-12] Effect of stellar mass black holes in the globular clusters on the detection rate of binary black hole mergers.

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Binary black hole mergers are one of the important candidate of gravitational wave (GW) emission. Recently a successful GW observation was done by LIGO team, but it is still uncertain how many GW signals will be observable. In this research, we perform simplified N-body simulations containing three mass components, ordinary stars with two kind of stellar mass black holes. Various BH compositions are tested to investigate the effect of BH mass function on binary formation rate. As a result, we find the binary formation rate is not much affected by BH mass function and always around 30 %, but the detectable merging binaries are largely depend on higher mass BH population.

[포 GC-13] REVERBERATION MAPPING OF PG 0934+013 WITH THE SOUTH AFRICAN LARGE TELESCOPE

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We present the variability and time lag measurements of PG 0934+013 based on the photometric and spectroscopic monitoring campaign over two years. We obtained 46 epochs of data from the spectroscopic campaign, which was carried out using the South African Large Telescope with 1 week cadence over two sets of 4 month-long observing period, while we obtained 80 epochs of B band data from the campaign. Due to the six month gap between two campaigns, we separately measured the time lag of the H β emission line by comparing the emission line light curve with the B band continuum light curve using the cross-correlation function techniques. We determined the time lags and black hole mass.

[포 GC-14] Environment of Warped Galaxy

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We analyze the dependence of environment of warped galaxies by using the local background density, Tidal Index and projected distance as measures of the environment. we use galaxies with redshift less than $z=0.025$ from the Sloan Digital Sky Survey (SDSS) DR7. We selected 345 edge-on galaxies using color images provided by the SDSS DR7 and checked it using isophotal maps. This sample contains 136 warped galaxies, 209 non-warped galaxies. Among warped galaxies, there are 18 strongly warped galaxies which have warp angles larger than 7.5σ . We calculated the fractional distributions of galaxies as a function of environmental parameters. All of these parameters show little difference between warped galaxies and non-warped galaxies if we include weakly warped galaxies. However, there is a clear difference in the fractional distributions between the strongly warped galaxies and non-warped galaxies. The fraction of warped galaxies increases with decreasing distance to the nearest neighbor galaxy but It increases with increasing background density and Tidal Index. However, the relationships between warp angles and the three environmental parameters are not strong. The effect of Tidal Index is well distinguished in small, bright galaxies whereas the effects of the background density and the distance to the nearest neighbor galaxy are more pronounced in large, bright galaxies.

[포 GC-15] The milli-arcsecond scale radio properties of central AGNs in cool-core and

non cool-core clusters

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We report preliminary results of KaVA observations of central galaxies in cool-core and non cool-core clusters. The main goal is to study how cooling environments of galaxy clusters affect the central AGN activities especially at its innermost region. For KaVA observations, 7 radio bright AGNs have been selected from the extended Highest Flux Galaxy Cluster Sample (eHIFLUGCS; the X-ray flux limited & all sky galaxy cluster catalog) with various cooling timescales. In our previous KVN study, we have found that most AGNs in the cool-core clusters show the hint of pc-scale jet-like features while the ones in the non cool-core clusters do not. Using the KaVA 22/43 GHz data of a much higher resolution than the KVN resolution, we have investigated detailed pc-scale jet properties such as physical size, morphology, and radiative age. Based on the KaVA data, we discuss the effect of cluster cooling environment on the evolution of AGNs in the cluster center.

[포 GC-16] Comparison between the Pair Fractions of Dark Matter Halos and Galaxies in Cosmological Simulations

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We investigate the pair fractions of dark matter halos and galaxies in cosmological simulations. The cosmological simulations are performed by a tree-particle-mesh code GOTPM (Grid-of-Oct-Tree-Particle-Mesh) and the dark matter halos are identified by a halo finding algorithm PSB (Physically Self-Bound). The 'galaxy' pair fractions are obtained from galaxy catalogues of L-Galaxies semi-analytical galaxy formation runs in the Millennium database. We present and compare the pair fractions of the dark matter halos and galaxies as functions of redshifts, halo masses and ambient environments.

[포 GC-17] The Environmental Dependence of the Mass-Size Relation for the Most Massive Galaxies

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We study the environmental dependence of the mass-size relation for the most massive early type galaxies ($M > 10^{10.7} M_{\odot}$) in the redshift range 0.10~0.15. The sizes of galaxies are measured by non-parametric method. We find that galaxies more massive than $10^{11.1} M_{\odot}$ show the environmental dependence in the mass-size relation. The galaxies with $M > 10^{11.1} M_{\odot}$ located in the densest, cluster like environment have larger sizes and extended surface brightness profiles than their counterparts located in a low dense environment. We also find that the environmental dependence of the mass-size relation is more significant for the brightest cluster galaxies (BCGs) than non-BCGs. We use the semi analytic galaxy formation simulation based on the Millennium 1 Simulation for interpretation. Our result can be explained with a hierarchical growth of the most massive galaxies through dissipation-less merger in dense environment.

[포 GC-18] A Phase-space View of Environmentally Driven Processes in the Virgo Cluster

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We study the orbital histories of Virgo galaxies undergoing different HI gas stripping stages using phase-space diagrams. Based on the HI properties of galaxies, we find that location of galaxies is in good agreement with ram-pressure stripping predicted by numerical simulations with different infall time. For example, galaxies experiencing active gas stripping are mostly found in the first infall region showing high velocity with respect to the cluster center. Meanwhile, most galaxies that are likely to have lost gas a while ago are found in the cluster outskirts with low orbital velocities. We also discuss the cases where observational properties of galaxies and their locations in the phase-space do not well agree. In addition, we probe the phase-space of filaments and subgroups