radio lobes align roughly with the blob's semi-major axis. With the SPOL polarimeter on the MMT telescope, we map the polarization in a grid of circular apertures of radius 0.6" (4.4 kpc), detecting a significant (>2σ) polarization fraction P% in 10 apertures and achieving strong upper-limits (as low as 2%) elsewhere. The degree of the polarization map increases from P% ~ 5% at ~5 kpc from the blob center to ~20% at the outer part (~30 kpc). The detections are distributed asymmetrically, roughly along the blob's major axis. The polarization angles (θ) are mostly perpendicular to this axis. These results are consistent with the picture that Lyα photons produced at the AGN (or the host galaxy) are resonantly scattered away from the center. Higher polarization fraction on the radio jet suggests that the gas is more optically thin along the jet than the off-axis region.

[구 GC-03] The Environmental Dependence of the Mass-Size Relation for the Most Massive Galaxies

Yongmin Yoon , Myungshin Im
CEOU/Astronomy Program, Dept. of Physics & Astronomy, Seoul National University

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. As a measure of the environment, galaxy number densities are measured by the 10^{th} nearest galaxies within 6500km/s from galaxies with spectroscopic redshifts. 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. Our result can be explained with a hierarchical growth of the most massive galaxies through dissipation-less merger in dense environment.

[구 GC-04] Alignments of interacting haloes in the Horizon run 4 simulation

Benjamin L'Huillier[1], Changbom Park[1] and Juhan Kim[1,2]
[1]School of Physics, Korea Institute for advanced Study,
[2]Center for Advanced Computation, Korea Institute for Advanced Study

Interactions such as mergers and flybys play a fundamental role in shaping galaxy morphology. We used the Horizon Run 4 cosmological N-body simulations to study the aligments of spins and shapes of interacting haloes as a function of the halo mass and large-scale density.

Interactions preferentially occur in the plane of rotation, and in the direction of the major axis of prolate haloes, and the trajectories are preferentially radial and prograde.

We found a very strong alignment of the shapes already at redshift as high as 4.

The spins are initially unaligned or even anti-aligned, and become more and more aligned as the redshift decreases.

The alignment signals are stronger and evolve more at lower densities, and mass plays a secondary role.

[구 GC-05] Mock Galaxy Catalogs from the Horizon Run 4 Simulation with the Most Bound Halo Particle - Galaxy orrespondence Method

Sungwook E. Hong (홍성욱)[1], Changbom Park (박창범)[1] and Juhan Kim (김주한)[2]
[1]School of Physics, Korea Institute for Advanced Study, [2]Center for Advanced Computation, Korea Institute for Advanced Study

We introduce an advanced one-to-one galaxy correspondence method that populates dark matter halos with galaxies by tracing merging histories of most bound member particles (MBPs) identified in simulated virialized halos. To estimate the survival time of a satellite galaxy, we adopt several models of tidal-destruction time derived from an analytic calculation, isolated galaxy simulations, and cosmological simulations. We build mock galaxy samples for each model by using a merging tree information of MBPs from our new Horizon Run 4 N-body simulation from $z = 12$ to 0. For models of galaxy survival time derived from cosmological and isolated galaxy simulations, about 40% of satellites galaxies merged into a certain halo are survived until $z = 0$. We compare mock galaxy samples from our MBP-galaxy correspondence scheme and the subhalo-galaxy scheme with SDSS volume-limited galaxy samples around $z = 0$ with $M_r - 5\log h < -21$ and -20. Compared to the subhalo-galaxy