

matter-only cosmological simulation, N-Cluster Run, we explore the evolution of galaxies on the phase space driven by large-scale filaments. We find that galaxies around the filaments form a common trajectory on the phase space as well as cluster galaxies do. We also examine how these trajectories change depending on various physical parameters such as galaxy mass, initial distance of galaxies from large-scale filaments, and cluster mass.

[포 GC-16] Deep polarization observations of a ram pressure stripped galaxy, NGC 4522

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We present high-resolution, high-sensitivity continuum data of NGC 4522 observed at 3 cm (X-band) and 10 cm (S-band) in full polarization mode using the JVLA. This observation has 2 - 4 times better spatial resolution and 2 - 5 times better sensitivity compared to previous continuum observations. NGC 4522 is a Virgo spiral galaxy undergoing active ram pressure stripping. This galaxy is particularly well known for the CO emission detected outside its stellar disk, some of which coincides with the extraplanar HI gas and H α patches. The major goal of our JVLA observation is to leverage our understanding of the influence of the ram pressure on the general ISM field and multi-phase medium. By combining our new deep radio continuum data and previous observations, we will investigate how the B-field properties can be affected by the ram pressure, and what roles the B-field plays in the stripping process of the multi-phased ISM and in the star formation activity when the ram pressure is present.

[포 GC-17] Physical Connection between Ionized Outflows and Radio jets in Young Radio Quasars.

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We present NIR spectroscopic data of young radio quasars obtained from Flamings-2 (F2) at Gemini-South. The targets are originally selected

from Wide-Field Infrared Survey Explorer survey in combination with radio survey data, such as FIRST and NVSS. Our goal is to find observational evidence of jet-driven outflows, which is expected to be present in young luminous quasars from the theoretical studies. While 16 targets were observed with F2, narrow emission lines ([O III] or H α) were detected in 7 targets. FWHM of the emission lines (up to 2500 km/s) were remarkably broad compared to ordinary quasars, revealing the presence of strong outflows. The black hole mass estimated from Eddington limit ranges from ~ 108 to 109 solar mass, indicating that the target quasars are likely to be progenitors of massive galaxies. Finally, we present the comparisons between the outflow velocity and the physical properties of radio jets derived from the VLA radio imaging data, in order to investigate the physical connection between the ionized outflows and radio jets.

[포 GC-18] Evolution of Star Formation Rate - Density Relation over Cosmic Time in a Simulated Universe: the Observed Reversal Reproduced

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We use the IllustrisTNG cosmological hydrodynamical simulation to study the evolution of star formation rate (SFR)-density relation over cosmic time. We construct several samples of galaxies at different redshifts from $z=2.0$ to $z=0.0$, which have the same comoving number density. The SFR of galaxies decreases with local density at $z=0.0$, but its dependence on local density becomes weaker with redshift. At $z \geq 1.0$, the SFR of galaxies increases with local density (reversal of the SFR-density relation), and its dependence becomes stronger with redshift. This change of SFR-density relation with redshift still remains even when fixing the stellar masses of galaxies. The dependence of SFR on the distance to a galaxy cluster also shows a change with redshift in a way similar to the case based on local density, but the reversal happens at a higher redshift, $z \sim 1.5$, in clusters. On the other hand, the molecular gas fraction always decreases with local density regardless of redshift at $z=0.0-2.0$ even though the dependence becomes weaker when we fix the stellar mass. Our study demonstrates that the observed reversal of the SFR-density relation at $z \geq 1.0$ can be successfully reproduced in cosmological simulations. Our results are consistent with the idea that massive, star-forming galaxies are strongly clustered at high redshifts, forming larger structures. These