target galaxy has a mass of ~10^{10} Msun, using ~17 million particles covering a cubic box of 1 $(Mpc/h)^3$. Here, individual particle masses for dark matter (DM) and gas are M_{DM} = 4.1×10^3 Msun and Mgas = 7.9×10^2 Msun, respectively, and thus each satellite can be resolved with more than several hundreds of particles.

[포 GC-03] On the origin of Na-O anticorrelation in globular clusters

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In order to investigate the origin of multiple stellar populations in the halo and bulge of the Milky Way, we have constructed chemical evolution models for the low-mass proto-Galactic subsystems such as globular clusters (GCs). Unlike previous studies, we assume that supernova blast waves undergo blowout without expelling the pre-enriched gas, while relatively slow winds of massive stars, together with the winds and ejecta from low and intermediate mass asymptotic giant branch stars, are all locally retained in these less massive systems. We first applied these models to investigate the origin of super-helium-rich red clump stars in the metal-rich bulge as recently suggested by Lee et al. (2015). We find that chemical enrichments by the winds of massive stars can naturally reproduce the required helium enhancement (dY/dZ = 6) for the second generation stars. Disruption of these “building blocks” in a hierarchical merging paradigm would have provided helium enhanced stars to the bulge field. Interestingly, we also find that the observed Na-O anticorrelation in metal-poor GCs can be reproduced, when multiple episodes of starbursts are allowed to continue in these subsystems. Specific star formation history with decreasing time intervals between the stellar generations, however, is required to obtain this result, as would be expected from the orbital evolution of these subsystems in a proto-Galaxy. The “mass budget problem” is also much alleviated by our models without ad-hoc assumptions on star formation efficiency and initial mass function.

[포 GC-04] Chemical Properties of Star-Forming Dwarf Galaxies in Different Environments

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Star forming dwarf galaxies in various environments are attractive objects for investigating the environmental effects on chemical evolution of dwarf galaxies. Using SDSS DR7 spectroscopic data and GALEX ultraviolet (UV) imaging data, we study the chemical properties of star forming dwarf galaxies in various environments of the Virgo cluster, Ursa Major group, and field. We derived gas-phase abundance, galaxy mass, and UV specific star formation rate (sSFR) of subsample, early-type (ETD) and late-type star forming dwarf (LTD) galaxies, which are divided by visually classified galaxy morphology. We found no O/H enhancement of LTDs in cluster and group environments compared to the field, implying no environmental dependence of the mass-metallicity relation for LTDs. LTDs in the Virgo cluster and Ursa Major group have similar sSFR at a given galaxy mass, but they exhibit systematically lower sSFR than those in isolated field environment. We suggest that LTDs in the Virgo cluster are an infalling population that was recently accreted from the outside of the cluster. We found that ETDs in the Virgo cluster and Ursa Major group exhibit enhanced O/H compared to those in the field. However, no distinct difference of N/O of galaxies between different environments. The chemically evolved ETDs in the Virgo cluster and Ursa Major group also show similar mass-sSFR relation, but systematically lower sSFR at a fixed galaxy mass compared to the field counterparts. We suggest that ETDs in the Virgo cluster and Ursa Major group have evolved under the similar local environments. We also discuss the evolutionary path of ETDs and LTDs with respect to the environmental effects of ram pressure stripping and galaxy interaction/merging.

[포 GC-05] Chemically young AGNs at high redshift

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Metallicity is one of the most important properties in understanding galaxy evolution. However, measuring metallicity is limited to low redshift (z<3.5) due to the faintness of the metallicity indicators in normal galaxies. For high redshift universe, active galactic nuclei (AGN) can be used to constrain the host galaxy metallicity.