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Recent studies suggest that the difference between global and local properties of galaxies (the local-global environmental (LoG) bias) might be important in the Type Ia supernova (SN Ia) host galaxy studies. Obtaining local spectroscopic properties of hosts at high redshift, however, is challenging. Here we will introduce a more efficient way to conduct this study by only using photometric data. We find that when we restrict a sample to the hosts whose stellar mass is less than 10^{10} $M_{\odot}$, a sample without LoG bias is efficiently selected. From the sample without LoG bias, we confirm that SNe Ia in locally star-forming environment are 0.103 ± 0.010 mag and 0.085 ± 0.012 mag fainter than those in locally passive region, for MLCS2k2 and SALT2, respectively. Because of ~6 times larger sample that covers much wider redshift range, our results are far more significant statistically, 10.3σ for MLCS2k2 and 7.1σ for SALT2, than previous results.

[구 GC-05] Internal kinematics of dwarf early-type galaxies with blue-center in the Virgo Cluster from Gemini GMOS long-slit spectroscopy

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Dwarf elliptical galaxies (dEs), the most abundant galaxy type in clusters, were recently shown to exhibit a wide variety in their properties. Particularly, the presence of blue cores in some dEs, what we call dE(bc), supports the scenario of late-type galaxy infall and subsequent transformation into red, quiescent dEs. While several transformation mechanisms for these dE(bc)s within cluster environment have been proposed, all these processes are able to explain only some of the observational properties of dEs. In this context, internal kinematic properties of dE(bc)s provide the most crucial evidence to discriminate different processes for the formation of these galaxies. We present Gemini Multi Object Spectrograph (GMOS) long-slit spectroscopy of two dE(bc)s in the Virgo cluster. We obtained radial profiles of velocity and velocity dispersion out to ~1.3 effective radius. We found that two dE(bc)s exhibit kinematically decoupled components as well as distinct peculiar features in velocity profiles, supporting the scenario of mergers. We also found that these galaxies are structurally compatible with low surface brightness component of blue compact dwarf galaxies. We suggest that a part of dE(bc)s in the Virgo Cluster were formed through galaxy merger in low density environment such as galaxy group or outskirt of the cluster, and then were quenched by subsequent effects within cluster environment.

[구 GC-06] Optical properties of dwarf galaxies in Leo I galaxy group

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Since the serendipitous discovery of a large-scale atomic hydrogen (HI) ring discovered in the Leo I galaxy group, its origin has been under debate till today, whether it is the leftover after group formation or stripped gas structure during the galaxy-galaxy interaction. Intriguingly a number of HI clumps have been identified along the gas ring, some of which turn out to be associated with optically catalogued dwarf galaxies. The formation history based on detailed optical and HI gas properties of those dwarf galaxies will enable us to verify the origin of the Leo ring. In this work, we first probe the redshift and multi-color properties of those dwarf galaxies, using deep photometric and spectroscopic data from CFHT, Gemini and Magellan telescope.

[구 GC-07] Recent galaxy mergers and star formation history of red sequence galaxies in rich Abell clusters at $z \leq 0.1$

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