## [포CD-07] Determination of Age and Metallicity of Early-Type Galaxies hosting Type Ia Supernovae

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Type Ia supernovae (SNe) are providing the most conclusive evidence for accelerating universe with dark energy in observational cosmology. In these investigations, look-back time evolution of SNe luminosity is regarded as negligible on the basic assumption. However, several recent works present some systematic differences among hosts which have different characteristics of stellar population. For more direct investigation, we are proceeding with our YONSEI (YOnsei Nearby Supernovae Evolution Investigation) project. Only early-type hosts in our catalogue were chosen in order to estimate the luminosity-weighted mean age and metallicity directly using Single Stellar Population (SSP) models and ignore the effect from the dust extinction. Observations using low-resolution spectrographs are still in progress at Las Campanas Observatory with 2.5m telescope and at McDonald Observatory with 2.7m telescope. We have thus far obtained spectra for 30 early-type hosts. After weak emission line correction, Lick/IDS absorption-line indices are measured and YEPS spectroscopic evolution model was applied to determine mean population ages and metallicities. Our preliminary results show that SNe Ia hosted in older galaxies seem to be brighter at 1.4 - 3 sigma levels, however, more observations and analyses are still needed to confirm this correlation.

## [포CD-08] The Dark Energy Research Using Type Ia Supernovae in the GMT Era: The Evolution-Free and Dust-Free Test

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The luminosity evolution of Type Ia supernova (SN Ia) and dust extinction play major roles in the systematic uncertainties in the SN cosmology. In order to overcome these obstacles, here we propose to use GMT-GMACS to take spectra for early-type host-galaxies of SNe Ia in the redshift range between 0.2 and 1.0. This high-redshift sample will be taken from Dark Energy Survey (DES), which expects more than 200 early-type hosts at this redshift range. They will be compared with nearby early-type hosts, for which we are now obtaining low-resolution spectra. We will select host-galaxies of same population age range for both nearby and high-redshift samples to reduce the possible evolution effect. Since we are dealing with early-type galaxies, our test is also less affected by dust extinction. We expect that our evolution-free and dust-free dark energy test will provide more robust results on the nature of dark energy.