location, we introduce a new method to infer the local environments by restricting the SN Ia sample in globally star-forming host galaxies to a low-mass host galaxy subset ($\leq 10^{10}$ $M_{\odot}$). We find that SNe Ia in low-mass and star-forming host galaxies are fainter than those in high-mass and passive hosts, after light-curve corrections. Especially, for the first time in host studies, we show that SNe Ia in locally star-forming environments are 0.081±0.018 mag fainter (4.5σ) than those in locally passive environments from the sample including SNe at the high-redshift range. Considering the significant difference in the mean stellar population age between these environments, the result would suggest that the origin of the environmental dependence is the luminosity evolution of SNe Ia.

[석 GC-23] Constraints on scalar field models of dark energy.

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We consider dynamical dark energy models based on a minimally coupled scalar field with three different potentials: the inverse power-law, SUGRA and double exponential potentials. For each model, we derived perturbation initial conditions in the early epoch and performed the Markov Chain Monte Carlo (MCMC) analysis to explore the parameter space that is favored by the current cosmological observations like Planck CMB anisotropy, type Ia supernovae, and baryon acoustic oscillation data. The analysis has been done by using the modified CAMB/COSMOMC code in which the dynamical evolution of the scalar field perturbations are fully considered. The MCMC constraints on the cosmological as well as potential parameters are derived. In the talk we will present a progress report.

성간물질

[구 IM-01] BISTRO: Magnetic Fields in Serpens Main

Woojin Kwon (권우진) on behalf of the BISTRO team
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The B-fields In STar-forming Region Observations (BISTRO 1 and 2) is a large program of the James Clerk Maxwell Telescope (JCMT) using SCUBA-2 and POL-2, starting in 2016. We aim to study the roles of magnetic fields in star formation by observing 32 fields of nearby low-mass and high-mass star forming regions. The angular resolution and the wavelength provided by JCMT (14 arcsecond at 850 micrometer) are ideal to investigate the intermediate scales of magnetic fields (1000-20000 au) associated in cold dense cores and filaments. We report the current status of this project and discuss the magnetic fields of the Serpens Main molecular cloud in which several filaments with various physical properties have been identified.

Note: (PI) D. Ward-Thompson, (co-PIs) P. Bastien, T. Hasegawa, W. Kwon, S. Lai, and K. Qiu

[구 IM-02] AKARI/IRC spectroscopic survey for interstellar ice study

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Ices in interstellar environments are well traced mostly by their absorption features in the near- to mid-infrared spectrum. The infrared camera (IRC) aboard AKARI provides us the near-infrared spectroscopic data which cover 2.5-5.0 μm with a spectral resolution of R ~ 120. Our AKARI spectroscopic survey of young stellar objects (YSOs), including low-luminosity protostars and background stars, revealed the absorption features of H_2O, CO_2, CO, and XCN ice components. We present near-infrared spectra of the observed targets and compare their ice abundances with those previously derived from various YSOs and the background stars behind dense molecular clouds and cores. In addition, we suggest possible science cases for SPHEREx, NASA's new near-infrared space observatory, based on the results from our AKARI IRC spectroscopic study.