RC are enhanced in CN compared to those in faint RC from our low-resolution spectroscopy. CN traces N, and N-rich stars are also enhanced in Na and He in GCs. Since GCs are the only environment that produce second generation stars with enhanced N, Na, & He, this is a direct evidence that stars in the classical bulge component of the MW were mostly provided by proto-GCs.

[포 GC-22] Photometric Reverberation Mapping of Active Galactic Nuclei with Medium-band Filters and a Large FOV Telescope.

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We present a noble method to determine BH mass of many AGNs directly through reverberation mapping using a small telescope with wide-field of view.
In 2017 August we installed five medium-band filters to a 0.25m diameter 5 deg^2 FOV telescope at the McDonald observatory. The width of these filters (FWHM ~ 50nm) are matched to the broad line width of type-1 AGNs at various redshifts. From recently obtained data, about r ~ 19 magnitude AGNs can be detected in line component with 150s exposure. With this magnitude limit, about 20~30 AGNs can be studied in one field. We plan to carry out at one day cadence observation over 20~30 fields, enabling us to monitor up to ~1000 AGNs over a wide range of variability. This poster presents out plan and early results from test observation.

[포 GC-23] The Environments of Post-Starburst Galaxies

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Post-starburst (E+A) galaxies are thought to be in the green valley transition phase between star-forming blue galaxies and quiescent red galaxies. They are identified by their unusual spectra characterized by strong Balmer absorption lines and weak emission lines, indicating a period of starburst followed by abrupt quenching. However, the underlying mechanism that drives the formation of E+A galaxies still remains contradictory or inconclusive. Thus, in order to differentiate between the different formation scenarios of E+A galaxies, we perform a statistical analysis of the environments of E+A galaxies. We spectroscopically identify a large sample of post-starburst galaxies from the Sloan Digital Sky
Survey Data Release 7 (SDSS DR7) using a selection criteria based on Hδ equivalent width. We report our findings and discuss their implications in the context of post-starburst galaxy formation.

우주론/암흑물질에너지

[포 CO-01] Redshift Space Distortion on the Small Scale Clustering of Structure

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The positions of galaxies in comoving Cartesian space varies under different cosmological parameter choices, inducing a redshift-dependent scaling in the galaxy distribution. The shape of the two-point correlation of galaxies exhibits a significant redshift evolution when the galaxy sample is analyzed under a cosmology differing from the true, simulated one. In our previous works, we can made use of this geometrical distortion to constrain the values of cosmological parameters governing the expansion history of the universe. This current work is a continuation of our previous works as a strategy to constrain cosmological parameters using redshift-invariant physical quantities. We now aim to understand the redshift evolution of the full shape of the small scale, anisotropic galaxy clustering and give a firmer theoretical footing to our previous works.

[포 CO-02] Small-scale Features of Thermal Inflation: CMB Distortion, Substructure Abundance, and 21cm Power Spectrum

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Thermal inflation is an additional inflationary mechanism before the big bang nucleosynthesis, which solves the moduli problem and naturally provides a plausible dark matter candidate. Thermal inflation leaves a slight enhancement followed by huge suppression of a factor of ~50 in the curvature and matter power spectrum, which can be expressed in terms of a single characteristic scale k_b. Here we describe the observability of the small-scale features of thermal inflation from various observations, such as CMB distortion, satellite galaxy abundance in the Milky-Way-sized galaxies, and 21-cm power spectrum before the epoch of reionization.

성간물질/별생성/우리은하

[포 IM-01] BISTRO and BISTRO-2

Woojin Kwon (권우진) on behalf of the BISTRO team
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The B-fields In STar-forming Region Observations (BISTRO) is the 3-year large program of the James Clerk Maxwell Telescope (JCMT) using SCUBA-2 and POL-2, started in 2016. We aim to study the roles of magnetic fields in star formation by observing 16 fields of nearby star forming regions, e.g., Orion and Ophiuchus molecular clouds. The angular resolution and wavelength provided by JCMT (14 arcsecond at 850 micrometer) is ideal to investigate the intermediate scales of magnetic fields (1000-10000 au) associated in cold dense cores and filaments. This year, moreover, we were awarded JCMT time for additional 16 fields (BISTRO-2), which allows us to cover broader physical properties of star forming regions. We report the current status of BISTRO and introduce BISTRO-2.

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

[포 IM-02] Filament, the Universal Nersery of Stars: Progress Report on TRAO Survery of Nearby Filamentary Filamentary Molecular Clouds

ShinYoung Kim[1,2], Eun Jung Chung[1], Chang Won Lee[1,2], Philip C. Myers[3], Paola Caselli[4], Mario Tafalla[5], Gwanjeong Kim[1], Miryang Kim[6], Archana Soam[1], Maheswar Gophinathan[7], Tie Liu[1], Kyounghee Kim[8], Woojin Kwon[1,2], Jongsoo Kim[1,2]
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To dynamically and chemically understand how filaments, dense cores, and stars form under different environments, we are conducting a systematic mapping survey of nearby molecular clouds using the TRAO 14 m telescope with high (N_2H^+ 1-0, HCO^+ 1-0, SO 32-21, and NH_2D v=1-0) and low (^{13}CO 1-0, $C^{18}O$ 1-0) density tracers. The goals of this survey are to obtain the velocity distribution of low dense filaments and their dense cores for the study of their origin of the formation, to understand whether the dense cores form from any radial accretion or inward motions toward dense cores from their surrounding filaments, and to study the chemical differentiation of the filaments and the dense cores. Until the 2017A season, the real OTF observation time is ~760 hours. We have almost completed mapping observation with four molecular lines (^{13}CO 1-0, $C^{18}O$ 1-0, N_2H^+ 1-0, and HCO^+ 1-0) on the six regions of molecular clouds (L1251 of Cepheus, Perseus West, Polaris South, BISTRO region of Serpens, California, and Orion B). The cube data for ^{3}CO and $C^{18}O$ lines were obtained for a total of 6 targets, 57 tiles, 676 maps, and 7.1 deg^2. And N_2H^+ and HCO^+ data were added for 2.2 deg^2 of dense regions. All OTF data were regridded to a cell size of 44 by 44 arcseconds. The ^{13}CO and $C^{18}O$ data show the RMS noise level of about (0.1-0.2) K and N_2H^+ and HCO^+ data show about (0.07-0.2) K at the velocity resolution of 0.06 km/s. Additional observations will be made on some regions that have not reached the noise level for analysis. To identify filaments, we are using and testing programs (DisPerSE, Dendrogram, FIVE) and visual inspection for 3D image of cube data. A basic analysis of the physical and chemical properties of each filament is underway.

[포 IM-03] Turbulent Properties in the Orion A and ρ Ophiuchus molecular clouds: Observations and preliminary results

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