Properties of the Orion Molecular Cloud

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Turbulence plays an important role in molecular clouds. However, the properties of turbulence are poorly understood. In order to study the influence of turbulence in molecular clouds, we need to sample the turbulent properties in the full range of scales down to sonic scale. We mapped the 20'×60' area covering the Orion Molecular Cloud (OMC) 1-4 region in HCN 1-0 and HCO+ 1-0 with Taeduk Radio Astronomy Observatory (TRAO) 14-m telescope as part of the TRAO key science program, "Mapping turbulent properties of star-forming molecular clouds down to the sonic scale (PI: Jeong-Eun Lee)". In addition, we combine our TRAO data with other molecular line maps (^{13}CO 1-0, C^{18}O 1-0, CS 1-0, N_2H^+ 1-0) obtained with the Nobeyama Radio Observatory (NRO) 45-m telescope. To analyze these data, we apply statistical methods, the principal component analysis (PCA) and spectral correlation function (SCF), which are known to be useful to study underlying turbulent properties and to quantitatively characterize cloud structure. We will present the preliminary results of observations and analyses.

[포 IM-09] Infrared Study of a Low-mass Star-forming Region L1251B

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A low-mass star-forming region, L1251B, is an excellent example of a small and nearby group of protostellar objects. L1251B has been mapped spectroscopically with the Infrared Spectrograph (IRS) onboard the Spitzer Space Telescope. IRS has provided mid-IR emission lines (e.g., [Fe II], [Ne II], and ro-vibrational H2) and absorption features of CO2 and H2O ice in studying the physical state of the ionized gas and the material residing in the circumstellar environments. We will present the distribution of outflows and ice components in L1251B.

[포 IM-10] Medium Resolution Spectroscopy of Red Giant Stars in Omega Centauri

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We present chemical abundances for about 800 red giant stars in Omega Centauri, based on medium-resolution spectra obtained using Hydra multi-fiber spectrograph at the CTIO 4-m telescope. Our sample covers 14.2 < V < 15.0, and is almost unbiased against colors (and therefore metallicity). The metallicity distribution function (MDF) constructed from our data has an overall shape and local peaks that approximately match those for brighter giant stars in Johnson et al.. We also find that more metal-rich cluster members are more concentrated in the cluster center, which is consistent with previous studies. On the other hand, we find no clear evidence for such a spatial dependence with respect to alpha elemental abundance ([α/Fe]).

[포 IM-11] Calibration of Stellar Isochrones for G- and K-type Dwarfs based on High-Resolution Spectra

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