

We present a recent progress on calibration of stellar isochrones based on a set of high-resolution spectra for 170 G- and K-type dwarfs in the solar neighborhood. We compare observed magnitudes of these stars in a number of broad passbands [UB(B_T)V(V_T)RIJHK] with model magnitudes generated using ATLAS9 synthetic library at the previously derived set of spectroscopic parameters. We find systematic offsets in colors from these passbands, which are mainly revealed as a function of effective temperature of stars. In order to remove these systematic color mismatches, we derive correction functions and apply them to the model spectra.

[포 IM-12] Abundant Methanol Ices toward a Massive Young Stellar Object in the Galactic Center

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Methanol (CH₃OH) is a key species in the formation of complex organic molecules. We report the first detection of solid CH₃OH in a line of sight toward the Galactic center (GC) region, based on L-band spectra taken with the Subaru telescope, aided by L'-band imaging data and moderate-resolution spectra from NASA/IRTF. It is found toward a background star, ~8000 AU in projected distance from a newly discovered massive young stellar object (YSO). This YSO also exhibits a strong CO₂ ice absorption band at ~15 μ m in Spitzer/IRS data, which has a prominent long-wavelength wing. It confirms that a high CH₃OH abundance is responsible for the broad 15 μ m CO₂ ice absorption towards massive YSOs in the GC. Clearly, CH₃OH formation in ices is efficient in the GC region, as it is in star-forming regions in the Galactic disk. We discuss implications of our result on the astrochemical processes in the hostile GC molecular clouds.

[포 IM-13] FIRST NEAR-INFRARED CIRCULAR POLARIZATION SURVEY

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Polarimetry is an important tool for studying the physical processes in the interstellar medium, including star-forming regions. Polarimetry of young stellar objects and their circumstellar structures provides invaluable information about distributions of matter and configurations of magnetic fields in their environments. However, only a few near-infrared circular polarization (CP) observations were reported so far (before our survey). A systematic near-infrared CP survey has been firstly conducted in various star-forming regions, covering high-mass, intermediate-mass, and low-mass young stellar objects. All the observations were made using the SIRPOL imaging polarimeter on the Infrared Survey Facility (IRSF) 1.4 m telescope at the South African Astronomical Observatory (SAAO). In this presentation, we present the first CP survey results. The polarization patterns, extents, and maximum degrees of circular and linear polarizations are used to determine the prevalence and origin of CP in the star-forming regions. Our results are explained with a combination of circumstellar scattering and dichroic extinction mechanism generating the high degrees of CP in star-forming regions. The universality of the large and extended CPs in star-forming regions can also be linked with the origin of homochirality of life.

항성 및 항성계

[포 ST-01] A MONTE CARLO STUDY OF FLUX RATIOS OF RAMAN SCATTERED O VI FEATURES AT 6825 Å AND 7082 Å IN SYMBIOTIC STARS

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A symbiotic star is a wide binary system consisting of a hot white dwarf and a mass losing giant, where the giant loses its material in the form of a slow stellar wind resulting in accretion onto the white dwarf through gravitational capture. Symbiotic stars are known to exhibit unique spectral features at 6825 and 7082, which are formed from O VI 1032 and 1038 through Raman