[포IGRINS-07] Stellar Parameters of M dwarfs determined by the long wavelength optical part spectra.

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For the stars cooler than the Sun, it is difficult to determine the stellar parameters and chemical abundances because of the strong molecular lines in the optical region. Therefore the NIR high-resolution spectra, such as those obtained by IGRINS would be a solution to determine the stellar parameters for late-type stars, such as M dwarfs. As using the NIR high-resolution spectra, we are expecting that it would be more reliable to compare observed spectra with synthetic spectra for the stellar parameters.

In order to confirm the method by using high-resolution spectra in NIR band, it should be cross-checked against the stellar parameters from optical high-resolution spectra. We have derived the stellar parameters of M dwarfs using the synthetic spectra in the long wavelength region of the optical spectra (over 8000 Å), which is relatively less contaminated by molecular lines as well as telluric lines.

[포IGRINS-08] Immersion grating mount design of IGRINS

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The IGRINS (Immersion GRating INfrared Spectrometer) is a high resolution wide-band infrared spectrograph developed by Korea Astronomy and Space Science Institute (KASI) and the University of Texas at Austin (UT). Immersion grating is a key component of IGRINS, which disperses the input ray by using a Silicon material with a lithography technology. Opto-mechanical mount for the immersion grating is important to keep the high spectral resolution and the optical alignment in a cold temperature of 130±0.06K. The optical performance of immersion grating can maintain within the de-center tolerance of ±0.05mm and the tip-tilt tolerance of ±1.5arcmin.

The mount mechanism utilizes the flexure and the kinematic support design to satisfy the requirement and the operation condition. When the IGRINS system is cooled down to a cold temperature, three flexures compensate the thermal contraction stress due to the different material between the immersion grating and the mounting part(Aluminum 6061). They also support the immersion grating by an appropriate preload. Thermal stability is controlled by a copper strap with proper dimensions and a heater. Generally structural and thermal analysis was performed to confirm the mount mechanism. This talk presents the opto-mechanical mount design of the immersion grating of IGRINS.