

[☞IGRINS-11] IGRINS : Mirror Mounts Optomechanical Design

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The Korea Astronomy and Space Science Institute (KASI) and the Department of Astronomy at the University of Texas at Austin (UT) are developing a near infrared wide-band high resolution spectrograph, IGRINS (Immersion Grating Infrared Spectrograph). The white-pupil design of the instrument optics uses 7 cryogenic mirrors including 3 aspherical off-axis collimators and 4 flat fold mirrors. Two of the 3 collimators are H- and K-band pupil transfer mirrors and they are designed as compensators for the system alignment in each channel. Therefore, their mount design will be one of the most sensitive parts in the IGRINS optomechanical system. The other flat fold mirrors are designed within the limited area. Each of those includes the features of 3 axial hard points and 2 radial hard points with one spring plunger in order for the proper deflection of the mirror. The design work will include the computer-aided 3D modeling and finite element analysis (FEA) to optimize the structural stability and the thermal behavior of the mount models. The mount body will also include a tip-tilt and translation adjustment mechanism to be used as the alignment compensators.

[☞IGRINS-12] Design of the IGRINS Calibration System

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We present development of the calibration system for IGRINS (the Immersion GRating Infrared Spectrograph). We mainly use Th-Ar and U hollow cathode lamp as the spectral calibration source and telluric features can be used additionally. For the flat source, we selected a 3000K tungsten halogen lamp with 2 inch integrating sphere. From Light Tools simulation, the result flat image through calibration optics satisfied <1% flatness error requirement. We also present mechanical design of calibration box that will be attached on the IGRINS dewar. Three moving stages are designed to perform switching mechanism between all of the observing modes - target observation, flat, precision RV measurement, and spectro-polarimetric observation.