

Design Review of Mechanical Construction for IRHS:Design of Cryostat and Cryogenic Actuators

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We carried out a detailed thermal and constructional design for Infrared High-resolution Spectrometer (IRHS). Since this spectrometer aims to observe mid-infrared spectra of interstellar molecules and dusts, the thermal emission from apparatus affects the observational data. Whole spectrometer is mounted into the cryostat, and the optics and the detector are cooled down to 30K and 4K respectively. In order to obtain each objective temperature, two plates (30K and 80K plates) are installed in this cryostat and supported by GFRP material. Four actuators are necessary for optical adjustment. For the accurate control of these actuators, cryogenic stepping motors are used under 30K condition. We developed the actuators with these motors.