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The Local Volume Mapper (LVM), for the Sloan Digital Sky Survey V, consists of four 16 cm telescopes with three fiber spectrographs in the Las Campanas Observatory in Chile. With the fixed telescopes on optical tables, the Alt-Alt mounted siderostats point and guide targets during spectrograph exposures. We are developing the integrated LVM instrument control software. Considering international travel restrictions caused by the COVID-19 pandemic in 2021, we decided to make a simplified version of siderostat to test the LVM telescope control system in Korea. The prototype siderostat consists of two aluminum flat mirrors, optomechanical housing structures made by aluminum profiles, and the Planewave L-350 mount. We designed the optical mirrors and the optomechanical structure of the siderostat. From structural analysis at various pointing cases, we estimated the tilt misalignments of mirrors within 4 arcsec, which would affect the telescope pointing errors.

[구 AT-08] Preliminary design of control software for SDSS-V Local Volume Mapper Instrument

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The Local Volume Mapper(LVM) project in the fifth iteration of the Sloan Digital Sky Survey (SDSS-V) will produce large integral-field spectroscopic survey data to understand the physical conditions of the interstellar medium in the Milky Way, the Magellanic Clouds, and other local-volume galaxies. We are developing the LVM Instrument control software. The architecture design of the software follows a hierarchical structure in which the high-level software packages interact with the low-level and mid-level software and hardware components. We adopt the spiral software development model in which the software evolves by iteration of sequential processes, i.e., software requirement analysis, design, code generation, and testing. This spiral model ensures that even after being commissioned, the software can be revised according to new operational requirements. We designed the software by using the Unified Modeling Language, which can visualize functional interactions in structure diagrams. We plan to use the SDSS software framework CLU for the interaction between components, based on the RabbitMQ that implemented the Advanced Message Queuing Protocol (AMQP).

고천문/ 교육홍보

[구 HE-01] Solar motion described in the Richan lizhi(日躔曆指), the Richan lifa(日躔曆法) and the Richan biao(日躔表) of the Kangxi reign treatises on Calendrical Astronomy, Lixiang kaocheng (曆象考成) (《역상고성》의 <일전역지>, <일전역법>, <일전표>에 기록된 태양의 운동)

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