Development of Attitude Control System for Lunar Observation Rover

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To elucidate the evolutionary processes of the moon, measuring surface heat flux is crucial. Our research lab aims to measure the lunar surface using a robotic rover equipped with a thermal probe, similar to the experiments where Apollo astronauts inserted thermal probes into the lunar soil to measure heat flux. The thermal probe rover penetrates the surface to measure subsurface heat flux while simultaneously observing the heated surface with an upper infrared camera, revealing thermal properties and inertia. Similar to astronaut-inserted probes, the surface is measured with four Time-of-Flight (TOF) sensors, and optimal measurements are autonomously conducted while maintaining posture with reaction wheels. This presentation reports on the development status of the thermal probe rover and its inverted attitude control system.

