Conceptual Study on SLIM: Smart Lunar Landing Technology Demonstrator

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Abstract. SLIM (Smart Lander for Investigating Moon) is a 400kg-class lander (wet mass) to the lunar surface under study by the Institute of Space and Astronautical Science (ISAS), Japan Aerospace Exploration Agency (JAXA). SLIM aims at pin-point landing to a gravitational planet surface. The required guidance is as accurate as within 100 meters to a target point. Some technologies for such accurate navigation and landing will be demonstrated in the SLIM project: They are image-based navigation relative to the lunar surface, autonomous obstacle detection, the C-band landing radar, shock absorbing for landing gears, the integrated fuel tank, etc. A tentative target of SLIM landing is vertical holes discovered by the Japanese lunar orbiter ‘KAGUYA’ (e.g., Marius Hills Hole). Furthermore, it is planned to load nano-rovers to explore the holes. SLIM is to be proposed as the 3rd flight of SPRINT program, which is low-cost small scientific spacecraft series under development at ISAS/JAXA. This presentation summarizes the status of SLIM system study.