Planetary Science Conference

The 5th National Mars Science Seminar

11.10.2024 | https://mars.uj.edu.pl

Advancing lunar exploration through agile reconnaissance with hopter Galago

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Hopter Galago is a reconnaissance scout robot with a total mass under 9 kg and 50 cm in diameter including actuators, electronics, and payload. In an ESA PLIIS project, a highly energetic actuator (> 50 J) was developed and tested up to TRL 4. It consumes limited power in an overall mass of only 1.5 kg, owing to slow energy accumulation and fast release at the desired energy level. The principle of operation is similar to that of low-velocity penetrators (e.g., HP3 of the InSight mission). Galago is capable of performing traverses up to 1.25 km in 6 hours. It is adaptable for mother-lander proximity missions. Moreover, it can self-egress from the lander and remains scalable to various missions and gravities due to energetic and low-power actuator. The platform can increase scientific return of the mission by obtaining visual and thermal measurements in areas inaccessible to rovers, studying lunar geological processes, regolith properties, and dust dynamics.

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