Special Issue

Aerobots and Hopping Vehicles for Exploration of Planetary Extreme Environments

Message from the Guest Editor

Planetary exploration has advanced from the use of flyby spacecraft to orbiters to landers and to rovers. However, due to limitations with current robotic landing systems, these landers and rovers can only land on relatively flat, benign terrain. Rovers, in turn, have advanced in size and mobility, enabling them to traverse kilometers over an entire mission. However, all these platforms are limited from exploring extreme and rugged environments such as crater walls, cliffs, canyons, and caves. Now, next-generation aerobot platforms are being proposed and built to fly off-world. Together with aerobot platforms are increasingly sophisticated hopping vehicles that are being proposed for achieving mobility in low-gravity environments such as asteroids, comets, and moons. In these environments, gravity is too low for conventional wheeled vehicles to gain traction, and hence, hopping is a viable technique to achieve higher speeds and greater range. Together, these new generations of aerobots and hopping platforms promise to extend the reach and capabilities of future planetary missions.

Guest Editor

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