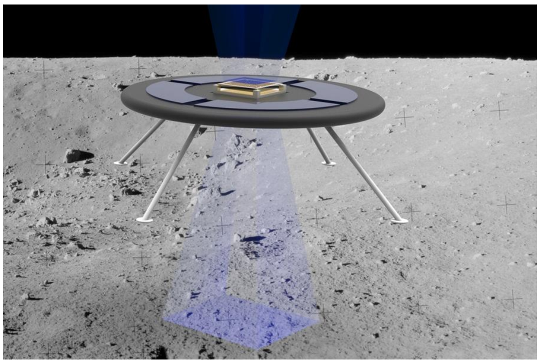

„farfuria zburătoare” proiectată de MIT ar putea într-o zi să-și planeze drumul peste Lună.

Due to the fact that the Moon lacks a protective atmosphere, its surface is directly exposed to space plasma and the Sun's ultraviolet rays. This causes it to become positively charged, enough so that lunar dust levitates up to 1 meter (3.3 ft) above the ground – it's the same effect that causes our hair to stand up when statically charged.

Previously, researchers have suggested utilizing this phenomenon in a spacecraft-deployed glider that would explore the surface of airless celestial objects *like* the Moon. If the wings were made of a positively charged material such as Mylar, it was reasoned that the glider and the positively charged lunar surface would repel one another, causing the glider to levitate.

According to the MIT team, although such a setup might work on small asteroids, the force of gravity on larger celestial bodies such as the Moon would still pull the glider down. That's where the flying-saucer-like rover would come in.

The un-crewed craft would boost the force of electrostatic repulsion by emitting beams of negatively charged ions outward – giving the rover itself a positive charge – *and* by emitting positively charged ions down onto the lunar surface, increasing its existing positive charge.

Those ions would be dispensed by nozzles on upward- and downward-facing miniature ion thrusters, which would apply voltage to an ionic liquid (molten salt) drawn from a connected onboard reservoir. Such thrusters are already used to [maneuver small satellites] in outer space.

In a proof-of-concept experiment, a 60-gram model rover "about the size of a person's palm" was hung from springs above an aluminum surface within a vacuum chamber, in order to simulate the low-gravity airless surface of the Moon. It was equipped with one upward-facing ion thruster, and four which were facing down. A horizontal tungsten rod positioned above the rover was used to measure how much force the thrusters produced.

After experimenting with various voltages, it was determined that a relatively small power source would be required to levitate a 2-lb (907-g) rover about 1 cm (0.4 in) above the lunar surface. Levitating a larger craft higher would obviously require more power, although further research needs to be conducted in order to determine how well the force of electrostatic repulsion would work at higher altitudes. Nonetheless, the technology does show promise for practical applications – particularly on small, very-low-gravity asteroids.

"With a levitating rover, you don’t have to worry about wheels or moving parts," says Prof. Paulo Lozano, who is leading the study along with graduate student Oliver Jia-Richards. "An asteroid’s terrain could be totally uneven, and as long as you had a controlled mechanism to keep your rover floating, then you could go over very rough, unexplored terrain, without having to dodge the asteroid physically."

A paper on the research was recently published in the *Journal of Spacecraft and Rockets* .

Source: MIT

-- https://newatlas.com/space/mit-levitating-flying-saucer-moon/?utm_source=New+Atlas+Subscribers&utm_campaign=c57450728b-EMAIL_CAMPAIGN_2021_12_24_09_08&utm_medium=email&utm_term=0_65b67362bd-c57450728b-90431105