



UCF

FACULTY RESEARCH TALKS

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Zoom talk | Friday, May 14, 2021 | Noon to 1 p.m.



PRESENTER 1:
ANDREW HORCHLER
Principal Research Scientist, Astrobotic

INDUSTRY PARTNER SPOTLIGHT:

Astrobotic

Space Robotics to Make the Moon More Accessible

Astrobotic is a space robotics company that seeks to make space accessible to the world. Its robotic lunar landers provide end-to-end payload delivery to the moon for companies, governments, universities, non-profits and individuals. This talk will overview Astrobotic's lunar missions, including its mission to deliver NASA's VIPER rover to the lunar south pole in 2023 to hunt for water ice. The talk will share some of Astrobotic's advanced technologies, including terrain-relative navigation and hazard detection that enable safe and precise landing at ever more challenging sites. Also to be discussed is Astrobotic's work developing lunar rovers to enable mobile science and exploration of the surface and planetary drones to autonomously explore lava tubes on the moon.

Dr. Horchler is Astrobotic's Principal Research Scientist and leads the development of robotics hardware and software for advanced applications that push the boundaries of what is possible in space. He serves as principal investigator on R&D contracts and technical lead on space robotics technology development projects, including a navigation sensor for precision landing that will fly on Astrobotic's first lunar mission and a hazard detection LiDAR sensor that will safely land NASA's VIPER rover on the south pole of the moon in 2023. Dr. Horchler has developed more than a dozen mobile robot platforms over the past 20 years that have been tested on simulated lunar regolith, on tortuous rubble piles and desert terrain, and have flown in caves and icy lava tubes. His other research interests include rendezvous and proximity operations for satellites, learning-based computer vision methods, reliable computing and in-situ resource utilization. Dr. Horchler holds a Ph.D. from Case Western Reserve University and a B.S.E. from Princeton University, both in mechanical engineering.



PRESENTER 2:
ADDIE DOVE
Assistant Professor,
Planetary Sciences,
Department of Physics

Lunar and Asteroidal Exploration: Dust as Science and a Hazard

NASA has a renewed push for sustained plans of robotic and human lunar exploration. Crucial to these plans are addressing issues that are of both scientific interest and may pose potential challenges for exploration. This includes dust, with hazards ranging from landing to mitigation, and astronaut health, tying into fundamental physics and planetary science as tracers of the surface and near-surface plasma environment. The talk will cover relevant experimental research, including cross-disciplinary collaborations and research with teams at NASA KSC SwampWorks.

Dr. Dove studies dust charging and dynamics on planetary surfaces, planet formation and plasma interactions with planetary and spacecraft surfaces. She is particularly interested in these topics because understanding these phenomena is key to successful planetary exploration and will be increasingly important as we continue to explore the moon and asteroids. She is the deputy principal investigator of the NASA SSERVI-funded Center for Lunar and Asteroid Surface Science (CLASS). She explores these processes through experiments in the Center for Microgravity Research labs at UCF and on research flights with parabolic aircraft, suborbital vehicles, the International Space Station and CubeSats.