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Author: Prof. David B. Spencer
Pennsylvania State University, United States

Mr. Michael Paul
Pennsylvania State University, United States

THE PENN STATE LUNAR LION: A UNIVERSITY MISSION TO EXPLORE THE MOON

Abstract

The Penn State Lunar Lion Team has proposed to send a robotic explorer to the surface of the moon to win the Google Lunar X Prize.

The Google Lunar X Prize is a competition run by the X Prize Foundation to set off a new era of lunar exploration, one that is championed by private industry rather than dependent on government funding. The competitors must land a craft on the moon, return high-resolution images and video, and then move that craft 500 meters to a new site and repeat the imaging mission. The first Team to accomplish the mission will win the *20MGrandPrizeofferedthroughtheXPrizeFoundation*.

The Lunar Lion Team will win this Prize through the collaboration of faculty and students from multiple disciplines inside our university, as well as strategic collaborations with industry partners. This multidisciplinary project will be not only a means for bringing together personnel from around the University, but also a way to attract faculty and students to these fields.

The baseline concept for the Lunar Lion will strictly follow the requirements of the Grand Prize and the Grand Prize only, leading to the simplest possible system for the mission, a spacecraft with the fewest number of systems and components. This will shorten the development timeline and result in a robust flight system that is of minimum cost. Wherever possible, the Team will use commercially available products to satisfy the needs of the system. The work of the Team will be efficient systems integration, careful operational planning, and focused mission execution, all with the Grand Prize in mind. By focusing on innovation rather than invention, Penn State will lead the field of competitors and land the next spacecraft on the moon.

The Lunar Lion Team was formed through collaboration between faculty from the College of Engineering, College of Earth And Mineral Sciences, Eberly College of Science, The Applied Physics Laboratory and the ARL Electro-Optics Center. The Penn State Team also reached out to likely Team members outside the University to widen the breadth and strength of the Team. Besides wide-scale involvement from students, the number of faculty and staff contributing to the Team will grow considerably.