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Hitchhiking to the Moon (8)

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IRIS: STUDENT COLLABORATION PROJECT FOR THE PROPOSED MOONRISE SAMPLE RETURN MISSION

Abstract

Introduction: The Impact Recording and Imaging System (IRIS) was developed by a team of student interns at NASA's Jet Propulsion Laboratory during the summer of 2010. IRIS is designed to be part of the proposed MoonRise Lunar South Pole-Aitken Basin sample return mission, which is currently one of three finalists under NASA's New Frontiers Program. The students were tasked by the MoonRise team to come up with innovative Student Collaboration Projects (SCP), Science Enhancement Opportunities (SEO) and Educational/Public Outreach (E/PO) concepts to be incorporated into the MoonRise Concept Study Reportl. The IRIS team consisted of students ranging from high school to graduate level who were involved in all aspects of mission design, from concept to operations. IRIS is designed to demonstrate NASA and JPL's commitment to involving students in the development of a spacecraft payload that returns meaningful science while inspiring future scientists and engineers. After a series of trade studies, the student team proposed the IRIS Student Collaboration Project (SCP) to the MoonRise Team. This concept proposes to fly a pair of cameras as part of the Communication Relay Satellite which is otherwise used by MoonRise to relay data from the lander on the far side of the Moon, back to Earth. Upon completion of its primary mission, the IRIS SCP would begin its operations. IRIS has two main goals: characterize the current lunar impact environment and inspire K-12 students to pursue careers in Science, Technology, Engineering and Math (STEM). To accomplish both of these goals, IRIS uses two imagers to view the surface of the Moon. Science: The science community has known since the early 20th century that impacting meteoroids cause flashes of light on the lunar surface that are visible from Earth [1]. Recently, based on flashes recorded by the Automated Lunar and Meteoroid Observatory it is estimated that the Moon experiences approximately 58 impacts per day [2]. The science goal of IRIS is to characterize the lunar impact environment. To do this, IRIS will monitor, record, and measure the luminosity of meteoroid impacts whenever the imagers are positioned over the Moon's night side.