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ADVANCING LUNAR EXPLORATION: CURRENT MISSIONS AND FUTURE PROSPECTS

Abstract

This session will explore the latest advancements in lunar exploration, highlighting both current and upcoming missions to the Moon. Topics will cover a range of activities, from orbital missions that map the lunar environment to robotic surface operations that will help us understand the Moon's potential for scientific discovery. These operations include Lunar Reconnaissance Orbiter (LRO) (NASA) , Chandrayaan-2 (ISRO), Artemis I (NASA) , Robotic surfaces: Chang'e-5 (CNSA), Lunar Gateway (NASA/ESA/JAXA), VIPER Rover (NASA), Lunar Reconnaissance Orbiter (LRO) (NASA). Special attention will be given to the integration of life sciences research on the Moon and a notable citation from the Biological Experiments on the Chang'e-4 (CNSA) life science research / NASA's BioNutrients Experiment (Artemis Program) and how resource utilization efforts could pave the way for sustainable lunar bases. Moreover, this session will examine preparatory steps that are crucial for future missions aimed at exploring deeper regions of our solar system. The session will offer a platform for discussing the next frontiers of lunar exploration and its pivotal role in humanity's space journey.