SPACE EXPLORATION SYMPOSIUM (A3)
Moon Exploration – Part 1 (2A)

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SUMMARY OF THE IN-ORBIT PERFORMANCE OF CHANG'E-3 LUNAR LANDER

Abstract

Chang'E-3 lunar lander had successfully completed the expected one-year exploration mission since December of 2014. Using the telemetry data of Chang'E-3 lunar lander, the main performance parameters during landing and working on the lunar surface were analyzed and summarized, including: (1) The realization of the main parameters of the Guidance, Navigation and Control (GNC) subsystem and the Propulsion subsystem during landing; (2) Compared with the simulation result, the interaction between the engine/thruster plume and lunar surface as the lander approaches to the lunar surface was evaluated based on the picture taken by landing camera; (3) The compression and tension stroke of landing gear during the soft landing were assessed, and the lunar regolith model was optimized through the simulation method; (4)Variations of solar wings power and lander temperature during moon eclipse were analyzed. (5) Based on the telemetry data of internal measuring point in the one year working on the lunar surface, the degradation process of thermal control materials was analyzed. (6) Based on the changes of the telemetry data of mechanism moving motion, influence factors, such as dust, static electricity, etc., was analyzed. Data mining and analysis of the in-orbit data of Chang'E-3 lunar lander can be used to modify and improve the simulation model, optimize the system/subsystem/device design, and found a solid foundation for the follow-up landing missions.