

Return to the Moon (02)
Goals and Status of Future Lunar Missions (2)

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OPTIMIZATION IN STRUCTURE DESIGN OF THE SPACECRAFTS OF CHINA CHANG'E
PROGRAM

Abstract

After more than forty years of Apollo missions, recently the moon is still the active space exploration destination due to the view of the necessary step for sustained robotic and human exploration of the solar system. Although the mission to the Mars with MSL has been launched by NASA instead of the Moon, other countries and administrations are still paying much attention to the Lunar-exploration. With respect to the Lunar exploration missions of China, three stages are carrying through with satisfactory of Chang'E 1 and 2 missions as the first phase. At present, the second phase is in progress that consists of a lander-roover stage. That phase is planned to be launched in the future to conduct exploration on the surface through the soft landing of a detector. Moreover, the third phase of the Chang'E Program consisting of a sample return stage that is planned to be carried out before 2020 is also under investigation. This paper focused on the optimization in structure design on the spacecrafts of the Chang'E program with the developed achievement as well as the undergoing approach for the subsequent missions. The optimization will be presented in the aspects including base structure, connections and joints, as well as the high-efficiency thermal protection structure for the reentry module. Comparison of optimization between the Chang'E program and other Lunar-exploration missions will be further concluded in the relative points of view.