

Lunar Exploration (2)
Lunar Exploration (1) (1)

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SLEEP-REBOOT DESIGN AND IMPLEMENTATION OF CHANG'E-4 LUNAR ROVER

Abstract

Abstract: Chang'e-4 lunar rover is the first achievement of human exploration on the farside of the moon. The new working environment brings challenges to the sleep-reboot of the lunar rover. The sleep-reboot constraints of the lunar rover are analyzed, including energy, thermal control, etc. And the implementation process of sleep-reboot satisfying the constraints is worked out in combination with the complex lunar farside terrain, relay satellite communication, and other new working environments, which includes skyline recognition, sleep and reboot time calculation, rover expected attitude calculation, sleeping position planning and moving, sleeping setting, reboot setting and so on, and specific solutions for each step are given. Finally, the on-orbit performance is explained. The working state of Chang'e-4 lunar rover during a few months proves the effectiveness of the sleep-reboot design. Key words: rover, lunar farside, sleep-reboot