

SPACE EXPLORATION SYMPOSIUM (A3)
Small Bodies Missions and Technologies (4)

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AN EXTENDED MISSION OF CHANG'E-2 FROM SUN-EARTH L2 POINT TO ASTEROID: DESIGN
AND ANALYSIS

Abstract

Being a part of Chinese Lunar Exploration Program, Chang'E-2 was launched on 1 Oct.2010. Chang'E-2 probe left lunar orbit for the Sun-Earth Lagrangian point L2 to test the tracking and control network after completing its primary objective. It entered Lissajous orbit around Sun-Earth L2 on 25 August 2011, and has remained a period until the end of Mar. 2012. In this paper, we will discuss the following mission after completing libration point mission. There are two promising scenarios. One is asteroid rendezvous mission aiming at Potentially Hazardous Asteroids (PHAs). The other is transfer mission from L2 to L1, called the heteroclinic connections. Here, we put the emphasis on the asteroid mission. According to the constraints of Chang'E-2 probe, especially the limited fuel, the potential target asteroids are analyzed and selected. Then, we search and present the optimal rendezvous opportunities for potential asteroids. The preliminary design results of the proposed missions will be reported. Finally, we analyze the trajectory characteristics and gave some key parameters, which would have a direct impact on communication system, power system, thermal control system of spacecraft and the optical instrument for science mission etc.