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SELENOCENTRIC ORBITS STABILIZATION BY ELECTRIC PROPULSION

Abstract

The lunar explorations require the creation of long-term functioning space systems. Most low selenocentric orbits are known to be unstable. Fuel consumption reducing to maintain the working selenocentric orbits is possible with the electric propulsion using. The paper analyzes the stability of the Low lunar orbits (60, 100, 120 km high) based on passive motion modeling taking into account the non-Central gravitational fields of the Earth, the Moon, and the Sun and point gravitational anomalies on the Moon surface. The two orbital stability criteria proposed in this paper clearly show changes in the orbit parameters, which is useful in analyzing the stability of satellite orbits. We proposed the formation method of control lows by electric propulsion at maintaining the orbit and calculated the reserves of the fuel consumption to maintaining a full class of selenocentric orbits. Based on the analysis, the orbits that are most suitable for long-functioning space systems are selected