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RANKING NEAR-EARTH OBJECTS FOR LONG-TERM MULTI-RETURN MINING MISSIONS

Abstract

Near-Earth Objects (NEOs) have long been recognized as possible sources of off-earth material or propellant. The objective of this paper is to identify and rank targets for mining water, Platinum Group Metals (PGMs) and silicates. This study first quantifies the roundtrip accessibility of all known Near-Earth Objects (NEOs) by constructing a roundtrip trajectory database. The roundtrips are constructed using the patched-conic method, and dynamical models in each mission phase are developed. It is found 13,481 (46