

Exploration of Near Earth Asteroids (06)
Poster Session (P)

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SOLAR ELECTRIC PROPULSION HUMAN MISSION SCENARIOS TO NEA USING VASIMR
TECHNOLOGY**Abstract**

This paper will present recent simulation results for Solar Electric Propulsion (SEP) human round-trip missions to the asteroids: 2000 SG344 and 2004 MN4 using the VASIMR (Variable Specific Impulse Magnetoplasma Rocket). The VASIMR is a high-power and high specific impulse electric propulsion system, with demonstrated operation at powers of 200 kW per thruster with thruster efficiency of 72% and specific impulse varying from 3,000 to 5,000 s, as demonstrated by recent experiments [Squire J. P., et al. (2011) IEPC-2011-154]. Future SEP missions to Near-Earth Asteroids (NEA) will greatly benefit from using VASIMR technology by leveraging these performance capabilities. The present mission analysis demonstrates that faster or comparable duration human SEP missions to NEA can be implemented with significantly less initial mass in low Earth orbit, as compared with all chemical mission.