ASTRODYNAMICS SYMPOSIUM (C1)
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ELECTRA - THE IMPLEMENTATION OF ALL-ELECTRIC PROPULSION ON A GEOSTATIONARY SATELLITE

Abstract

In September 2003, ESA launched the lunar probe SMART-1. Using a single electric thruster providing only 70 mN of thrust, SMART-1 traversed the radiation belts under the worst solar storm conditions ever recorded to successfully reach the Moon in November 2004.

Ten years later, the legacy of SMART-1 has been an important contributor to the implementation of the Electra programme, aimed at developing Europe's first all-EP telecommunications satellite. Thanks to the significant propellant savings offered by electric propulsion, Electra will be able to host the same payload capability as traditional telecom satellites, whilst achieving a much lower launch mass.

The paper will discuss the challenges associated with the implementation of all-electric propulsion on telecom satellites, and explain how the experiences of SMART-1 and other relevant missions have contributed to Electra. The first Electra mission is planned to be launched in the 2017-2018 timeframe.