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IN-ORBIT DEMONSTRATION OF BI-DIRECTIONAL ELECTRODELESS PLASMA THRUSTER

Abstract

The use of propulsion systems is moving from single-tasking to multi-tasking. This means that the propulsion system on board a satellite is becoming a tool to accomplish multiple propulsion-requiring tasks rather than a single objective. This transition requires the use of propulsion systems with multiple thrust vectoring capabilities, for example, to optimize mission performance during maneuvers, to overcome center of gravity shifts during the mission, or to desaturate the mechanical attitude control systems. This study reports on the ability of the 2U size bi-directional electrodeless plasma thruster to control satellite attitude and change orbital characteristics. The 6U size satellite named Khors-1 with integrated thruster is launched on June 27, 2023. The in-orbit demonstration of the bi-directional thrust vectoring capability of the electrodeless plasma thruster allows the transition to the recently proposed tri- and multi-directional concepts.