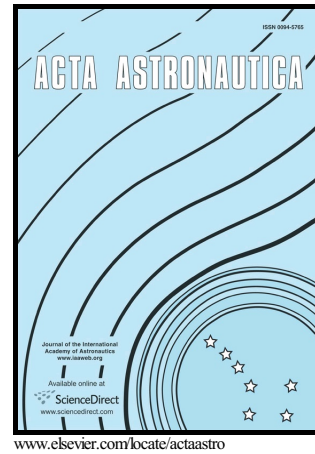


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Propulsion Options for Very Low Earth Orbit Microsatellites

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Abstract

The growing competitiveness in the commercial space market has raised the interest in operating small spacecraft at very low altitudes. To make this feasible, the space industry has started developing propulsion options tailored specifically to these platforms. This paper presents a review of emerging micropropulsion technologies and evaluates their applicability to microsatellite missions in the altitude range 250 – 500 km. The results of the proposed analysis are demonstrated on two different remote sensing applications.

Keywords: Space Propulsion, Microsatellite, Low Earth Orbit, Station-Keeping

1. Introduction

In the last years, major satellite manufacturers have presented development programs for small multimission platforms, with the objective of delivering low-cost communications and Earth observation (EO) data, see, e.g., [1, 2, 3, 4, 5].
5 Most of these platform are designed to operate on a Low Earth Orbit (LEO), in order to contain the mission cost. In fact, the size and power consumption of optical and radar instruments scale with the orbital altitude, for a given instrument performance. Thus, a low operational altitude opens up the possibility

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