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NANOSATELLITE MISSION TO NEAR-EARTH OBJECTS: AN OVERVIEW

Abstract

In recent years, the interest and study of Near-Earth Objects (NEO) have increased. Nowadays, it is wanted to study more to the NEO for various reasons, among which one can mention the study of its composition, its orbits, and its possible impact on the Earth. One of the main limitations of the study of NEOs, especially for developing countries, is the high cost of missions. In this sense, an alternative could be to use small satellite missions and commercial electric, electronic, and electromechanical (EEE) devices, these being more economical than those for military use. In recent years, nanosatellites' design, implementation, and deployment have increased exponentially. These nanosatellites use commercial components known as COTS, making it possible to reduce the mission's costs. In recent years, the term "Space COTS" developed in Germany has been designed to indicate those commercial components that have been qualified for space use. In the present work, a proposal of NEO nanosatellite missions and a study of the state-of-the-art NEO missions using Space COTS are presented at a general level, especially missions proposed by developing countries. The use of the Space COTS will reduce the costs of a NEO mission and enable its study based on nanosatellite missions. Due to technological advancements, nanosatellite missions have been achieved for educational purposes and for more scientific tasks. Similarly, it is expected that investment in nanosatellite missions to the NEO could revolutionize their study and analysis.