SPACE DEBRIS SYMPOSIUM (A6)
Modelling and Risk Analysis (2)

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THE METHOD OF PREDICTING SPACE DEBRIS IN LOW-EARTH ORBITS, TAKING INTO ACCOUNT MUTUAL COLLISIONS AND ACTIVE DEBRIS REMOVAL

Abstract

Space debris (SD) in Near-Earth Space (NES) is an important negative consequence of its practical development. Further development in NES is impossible without objective analysis of the current population of space debris, its sources and patterns of evolution. Particularly acute, this problem with respect to the Low-Earth Orbits (LEO), where space debris is the maximum and there is a real danger of mutual catastrophic collisions of space objects. The report is devoted to the methodology assessment of effectiveness Active Debris Removal (ADR) on the evolution of the space debris in the LEO region with the mutual collisions of objects larger than 10 cm. Methodology is based on the use of a statistical approach for modeling SD and use additional information about the objects that can be removed from the LEO region. A distinctive feature of this method is significantly less time prediction, compared to the traditional deterministic methods. Presents the results of calculations for the assessment of effectiveness of removal and comparison with analogues.