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COMPUTATIONS OF CONTACTLESS EFFECTS ON SPACE DEBRIS OBJECT USING ITS KNOWN CONTOUR

The proposed previously simplified approach to the determination of the effects of space debris on the object from the electric jet engine of a spacecraft (a shepherd) in removing space debris using the ion-beam shepherd technology is considered. The approach is based on the method of computations of the effects using information about the contour of a central projection of an object on some plane perpendicular to the axis of the ion flow of the engine plume. Errors of this method are analyzed. The results of the analysis allow the application of the above method in the context of a self-similar model of propagation of the plume plasma flow. A preliminary conclusion about applications of this simplified approach to the control of a relative motion of the system of the shepherd and the object of space debris is also made.

Keywords: *space debris removal, ion-beam shepherd technology, system of spacecraft and space debris object, contour of central debris projection, simplified computations of force effects, simulation of relative motion of system.*

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