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The purpose of the work is to validate the proposed system for contactless removal of space debris from near-earth orbits using an aerodynamic compensator. The technical solution associated with the ion-beam space shepherd is best suited to the proposed system. The authors' system differs in that instead of an additional jet engine the satellite includes the aerodynamic compensator of the engine thrust force, which is a source of an ion flow. The aerodynamic compensator parameters are assessed, and a preliminary conclusion about its applicability is made.

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(NASA) 2016 .
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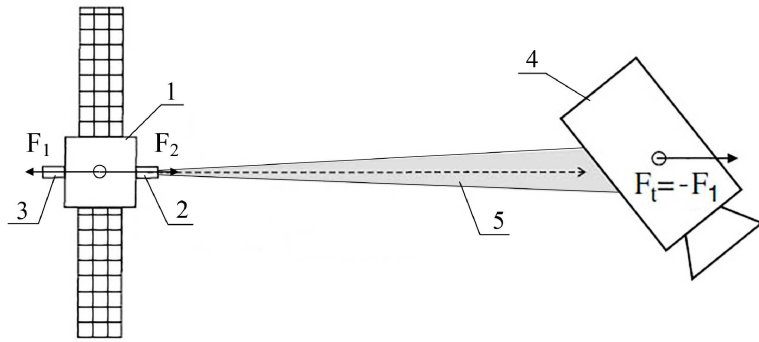
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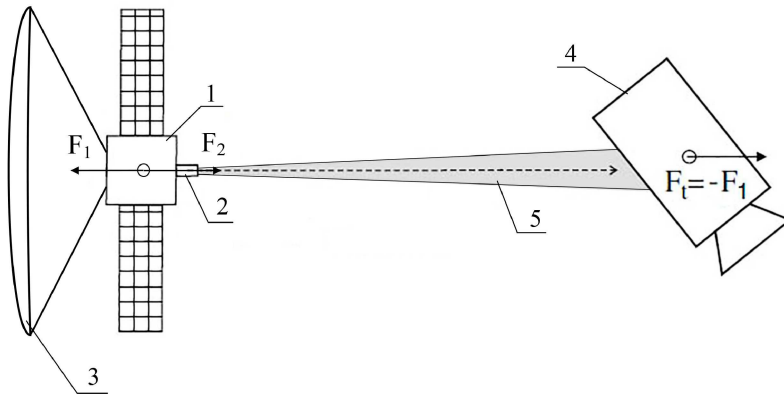
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[17]:

$$S_{ак} = F_{тяги} \cdot \frac{2}{c_x \cdot \rho \cdot V^2},$$

$F_{тяги}$ -

; c_x -

; ρ -

; V -
; $m_{ак}$ -

:

$$m_{ак} = m_{пл} + m_{мп},$$

$m_{пл}$ -

, $m_{мп}$ -

-

$$V = 7,73 \cdot 10^3 -$$

300 ;

$$c_x = 2,2$$

$$\rho = 1,255 \cdot 10^{-11} \frac{3}{3}$$

300 ;

– $F = 10$ [10].

$$S_{ак} = 12,12^2,$$

$$m_{пл} = S_{ак} \cdot \delta \cdot \rho_{полиимид},$$

$\delta = 5 \cdot 10^{-5}$, $\rho_{полиимид} = 1420 \frac{г}{см^3}$ [18].

$$m_{пл} = 0,86$$

1,1 ([11],

): $m_{мр} = 1,1$

: $m_{ак} = 1,96$

$$m = m_{д} + m_{п},$$

$m_{п} = \dot{m} \cdot t$, $m_{д} =$, $m_{п} =$

»:

$$m_{п} = 6,48$$

$$t = 150 = 12960000$$

$\dot{m} = 0,5$ — [5];

$m_{д} = 1,5$ -70 [19].

« » 8 .

« » 2 , 8 . , 25 %

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75 %.

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29.09.2016