Correction to the paper

"Analytical Solutions for Averaged Equations of Optimal Orbit-to-orbit Transfer with a Thrust of Constant Magnitude in a Strong Gravity Field" "Journal of Automation and Information Sciences", 2002, No. 34(4)

In the indicated paper from the obtained possible solutions of the averaged differential equations of the optimal transfer between elliptical orbits [1] the solutions, which contain the extremum points of the eccentricity $e_m = 1$ or $e_m = 0$, are to be thrown off right away since they do not belong to the domain of definition of the equations $0 < e < 1, 0 < I < \pi$.

Correspondingly, while solving a partial problem about the flat manoeuvre of change of the form and size of an orbit with simultaneous change of the pericentre angle on $180°$, one is to take account of the following remark. If it has turned out that $e_* = 0$ then to obtain solution one is to pass to the limit $e_* \to 0$ in solution (24)–(27), (29) taking into account fulfillment of condition (37), i.e., taking $e_m = e_* = 0$, $\delta_e^o = -1, \delta_e^f = 1$. You needn't take $e_* = 0$ in the very differential equations. Instead of formulae (41) we obtain

$$\gamma = \frac{1}{\sqrt{10}}\left\{\frac{\pi}{2} - \arcsin(1 - 2e_o^2) + \delta_e\left[\frac{\pi}{2} - \arcsin(1 - 2e^2)\right]\right\},$$

$$|\omega - \omega_o| = (1 + \delta_e)\frac{\pi}{2},$$

where $\delta_e = -1, \gamma \le \gamma_{me}; \delta_e = 1, \gamma > \gamma_{me}; \gamma_{me} = \frac{1}{\sqrt{10}}\left[\frac{\pi}{2} - \arcsin(1 - 2e_o^2)\right]$.

Therefore, the orbit becomes, at first, circular, and then it changes in the opposite direction up to the necessary form and size. At that

$$\gamma_f = \frac{1}{\sqrt{10}}\left\{\frac{\pi}{2} - \arcsin(1 - 2e_o^2) - \arcsin(1 - 2e_f^2)\right\}.$$

1. Kiforenko B.N., Pasechnik Z.V., Vasilyev I.Yu., Analytical solutions for averaged equations of optimal orbit-to-orbit transfer with a thrust of constant magnitude in a strong gravity field, *Problemy upravleniya i informatiki*, 2002, No. 2, 126–139.

Z.V. PASECHNIK, V.V. GONCHAROV

ISSN 1064-2315