

that the results presented in Ref. 2 have the accuracy comparable to that shown in the current paper.

For the drag problem, the variations of the motion from the average were brought out in Ref. 4; therefore the statement about the drag problem in the introduction of the current paper should be amended.

### References

<sup>1</sup> Brofman, W., "Approximate analytical solution for satellite orbits subjected small thrust or drag," AIAA J. 5, 1121-1128 (1967).

<sup>2</sup> Zee, C. H., "Low constant tangential thrust spiral trajectories," AIAA J. 1, 1581-1583 (1963).

<sup>3</sup> Zee, C. H., "Low thrust oscillatory spiral trajectory," *Astronaut. Acta* IX, 201-207 (1963).

<sup>4</sup> Zee, C. H., "Trajectories of satellites under the influence of air drag," *AIAA Progress in Astronautics and Aeronautics: Celestial Mechanics and Astrodynamics* edited by V. G. Szebehely (Academic Press Inc., New York, 1964) Vol. 14, pp. 101-112.

<sup>5</sup> Cohen, M. J., "Low-thrust spiral trajectory of a satellite of variable mass," AIAA J. 3, 1946-1949 (1965).

## Comment on "One-Dimensional Minimum-Time Rendezvous for a Thrust-Limited Rocket"

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REFERENCE 1 considers optimum methods to deliver a given final mass to a specified position-velocity state in minimum time. Two cases are compared, the specified final mass case and the specified initial mass case. The main result for mass ratio  $\mu$  in the case of initial specified mass is given by Eq. (18) in the reference as

$$z_{1f} = \mu - 2\mu e^{-(z_{2f} + \ln \mu)/2} - z_{2f} + 1$$

where  $z_{1f}$  and  $z_{2f}$  are normalized position and velocity variables. The equation is described as "transcendental" and no solution is exhibited for  $\mu$ . Although this equation is indeed transcendental in  $z_{2f}$  it is algebraic in terms of  $\mu$  and may be solved explicitly to yield

$$\mu^{1/2} = e^{-z_{2f}/2} + [e^{-z_{2f}} + (z_{1f}^{1/2} + z_{2f} - 1)]^{1/2}$$

### Reference

<sup>1</sup> Anderson, G. M., Falb, P. L., and Robinson, A. C., "One-dimensional minimum-time rendezvous for a thrust-limited rocket," AIAA J. 5, 1017-1019 (1967).

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## Errata: "Langmuir Probe Diagnosis of Turbulent Plasmas"

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[AIAA J. 4, 451-459 (1966)]

MESSRS. T. W. Johnston and A. K. Ghosh of RCA Victor Company, Ltd. have kindly pointed out minor numerical errors in certain formulas of the reference cited above. The last term of the second bracket of Eq. (28) should read  $2(\Delta T/\bar{T})(\Delta \bar{\eta})$  instead of  $(\Delta T/\bar{T})(\Delta \bar{\eta})$ . Equation (21) should read:

$$\begin{aligned} J/j_0 = & 1 - \frac{1}{8}(1 - 3\bar{\eta})(1 + \bar{\eta})^{-1}(\Delta T/\bar{T})^2 + \\ & \frac{1}{2}(1 - \bar{\eta})(1 + \bar{\eta})^{-1}(\Delta n/\bar{n})(\Delta T/\bar{T}) + \\ & (1 + \bar{\eta})^{-1}[(\Delta n/\bar{n})(\Delta \bar{\eta}) - \frac{1}{2}(\Delta T/\bar{T})(\Delta \bar{\eta})] \end{aligned}$$

and Eq. (31) should read

$$\begin{aligned} (\Delta j)^2/j_0^2 = & (\Delta n/\bar{n})^2 + \frac{1}{4}(1 - \bar{\eta})^2(1 + \bar{\eta})^{-2}(\Delta T/\bar{T})^2 + \\ & (1 + \bar{\eta})^{-2}(\Delta \bar{\eta})^2 + (1 - \bar{\eta})(1 + \bar{\eta})^{-1}(\Delta n/\bar{n})(\Delta T/\bar{T}) + \\ & 2(1 + \bar{\eta})^{-1}(\Delta n/\bar{n})(\Delta \bar{\eta}) + (1 - \bar{\eta})(1 + \bar{\eta})^{-2}(\Delta T/\bar{T})(\Delta \bar{\eta}) \end{aligned}$$

In the limit  $\bar{\eta} \gg 1$  these two equations will yield correct forms of Eqs. (22) and (32).

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## Erratum: "Transformation of Hypersonic Turbulent Boundary Layers to Incompressible Form"

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[AIAA J. 5, 1202-1203 (1967)]

ON page 1202, last term of equation for  $\mu_\sigma \sigma / \bar{\mu}$  should read  $K(\bar{C}_f/2)(\xi_f^2/3)$ .

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