Reply by Authors to L.E. Ericsson

B.-G. Tong* and W.H. Hui†
University of Waterloo, Ontario, Canada

IN reply to L.E. Ericsson's comment on our paper,[1] it is necessary to first point out that gasdynamic theory is accepted by most researchers as the foundation on which any rational approximate theory must be based. In this regard, we reiterate that there is *only one correct limiting value of gasdynamic theory* in the double limit as freestream Mach number $M_\infty \to \infty$ and the ratio of specific heats $\bar{\gamma} \to 1$. The limiting value is the Newton-Busemann value and not the Newtonian impact value alone. These have been well established in numerous publications.[2-7]

The sharp cone value used as scaling factor by Dr. Ericsson is the Newtonian impact value alone and is thus not the correct limiting value of gasdynamic theory. Ericsson's result is properly represented in Fig. 4 of our paper as it is rescaled by the correct limiting value, i.e., the Newton-Busemann value. The fact that it was rescaled is clearly indicated in the text and in Fig. 4 of Ref. 1 and should not cause confusion with Fig. 5 of Ref. 8.

References

[1]Tong, B-G. and Hui, W.H., "Unsteady Embedded Newton-Busemann Flow Theory," *Journal of Spacecraft and Rockets,* Vol. 23, March-April 1986, pp. 129–135.

[2]Cole, J.D., "Newtonian Flow Theory for Slender Bodies," *Journal of the Aeronautical Sciences,* Vol. 24, June 1957, pp. 448–455.

[3]Hayes, W.D. and Probstein, R.F., *Hypersonic Flow Theory,* Vol. 1, Academic Press, Orlando, FL, 1966, Chap. 3.

[4]Mahood, G.E. and Hui, W.H., "Remarks on Unsteady Newtonian Flow Theory," *Aeronautical Quarterly,* Vol. 27, 1976, pp. 66–74.

[5]Hui, W.H. and Tobak, M., "Unsteady Newton-Busemann Flow Theory, Part I: Airfoils," *AIAA Journal,* Vol. 19, March 1981, pp. 311–318.

[6]Hui, W.H. and Tobak, M., "Unsteady Newton-Busemann Flow Theory, Part II: Bodies of Revolution," *AIAA Journal,* Vol. 19, Oct. 1981 , pp. 1272–1273; full paper available as NASA TM-80459.

[7]Hui, W.H. and Van Roessel, H.J., "Unsteady Newton-Busemann Flow Theory, Part IV: Three-Dimensional," *AIAA Journal,* Vol. 22, May 1984, pp. 577–578.

[8]Khalid, M. and East, R.A., "Stability Derivatives of Blunt Slender Cones at High Mach Numbers," *Aeronautical Quarterly,* Vol. 30, 1979, pp. 559–599.

Submitted July 15, 1986.

*Visiting Professor; permanently Professor and Chairman, Department of Modern Mechanics, University of Science and Technology of China, Hefei, Anhui, China.

†Professor of Applied Mathematics and Mechanical Engineering. Member AIAA.

Errata

Path-Constrained Rendezvous: Necessary and Sufficient Conditions

K.M. Soileau
NASA Johnson Space Center, Houston, Texas
and
S.A. Stern
University of Colorado, Boulder, Colorado
[J. Spacecraft, **23**, 492–498 (1986)]

EQUATIONS (2a–c) were printed incorrectly. They should read as follows:

$$\dot{x}_0(\tau) = \frac{x_0\omega\sin(\theta) + y_0\omega\{6\theta\sin(\theta) - 14[1-\cos(\theta)]\}}{3\theta\sin(\theta) - 8[1-\cos(\theta)]} \tag{2a}$$

$$\dot{y}_0(\tau) = \frac{2\omega x_0[1-\cos(\theta)] + y_0\omega[4\sin(\theta) - 3\theta\cos(\theta)]\ \}}{3\theta\sin(\theta) - 8[1-\cos(\theta)]} \tag{2b}$$

$$\dot{z}_0(\tau) = \frac{-\omega z_0}{\tan(\theta)} \tag{2c}$$

where $\theta = \omega t$.