

Technical Comments

Brief discussions of previous investigations in the aerospace sciences and technical comments on papers published in the AIAA Journal are presented in this special department. Entries must be restricted to a maximum of 1000 words, or the equivalent of one Journal page including formulas and figures. A Discussion will be published as quickly as possible after receipt of the manuscript. Neither the AIAA nor its editors are responsible for the opinions expressed by the correspondents. Authors will be invited to reply promptly.

Comment on "Bending Effects on Structural Dynamic Instabilities of Transonic Wings"

Larry L. Erickson*
NASA Ames Research Center
Moffett Field, California

THE introduction of Ref. 1 states that the first documented occurrence of nonclassical transonic flutter, i.e., transonic flutter in which only a single degree-of-freedom of the structure is prominently involved, was in September 1977 on the HiMAT 0.22-scale aeroelastic model in Rockwell's Trisonic Wind Tunnel.

Actually, earlier occurrences were reported in 1970, 1971, and 1974 in Refs. 2, 3, and 4, respectively. References 2 and 3

deal with the transonic flutter behavior of the aspect ratio 7 straight wing proposed for an early version of the space shuttle. This wing exhibited a flutter motion over a narrow transonic Mach number range that was predominately 1st-mode bending. The lower aspect ratio wing of Ref. 4 exhibited single-mode flutter in either the 1st or 2nd modes, depending upon whether or not a boundary-layer trip was employed.

References

- ¹Malmuth, N.D., Chakravarthy, S.R., Cole, J.D., and Goebel, T.P., "Bending Effects on Structural Dynamic Instabilities of Transonic Wings," *Journal of Aircraft*, Vol. 21, Nov. 1984, pp. 913-920.
- ²Erickson, L.L., Gambucci, B.J., and Wilcox, P.R., "Initial Transonic Flutter Results for a Straight Wing Version of the Space Shuttle Vehicle," NASA-Ames SSPD-17, Dec. 1970.
- ³Erickson, L.L., Gambucci, B.J., and Wilcox, P.R., "Effects of Space Shuttle Configurations on Wing Buffet and Flutter, Part II, Thick High-Aspect-ratio Wing," *NASA Space Shuttle Technology Conference. Volume III - Dynamics & Aeroelasticity*, NASA TM X-2274, April 1971, pp. 201-229.
- ⁴Erickson, L.L., "Transonic Single-Mode Flutter and Buffet of a Low Aspect Ratio Wing having a Subsonic Airfoil Shape," NASA TN D-7346, Jan. 1974.

Submitted September 19, 1985. This paper is declared a work of the U.S. Government and therefore is in the public domain.

*Aerospace Engineer.