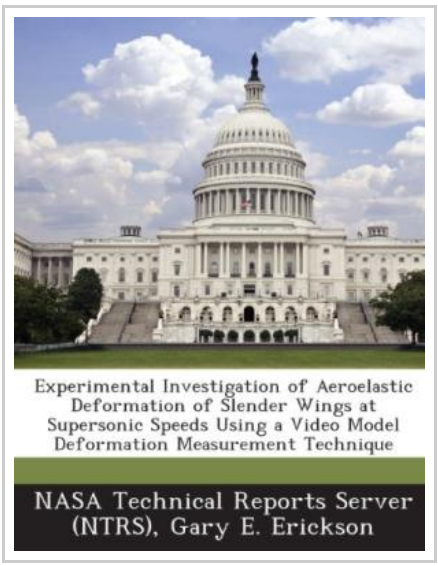

Experimental Investigation of Aeroelastic Deformation of Slender Wings at Supersonic Speeds Using a Video Model Deformation Measurement Technique

By Gary E Erickson

Bibliogov, United States, 2013. Paperback. Book Condition: New. 246 x 189 mm. Language: English . Brand New Book ***** Print on Demand *****.A video-based photogrammetric model deformation system was established as a dedicated optical measurement technique at supersonic speeds in the NASA Langley Research Center Unitary Plan Wind Tunnel. This system was used to measure the wing twist due to aerodynamic loads of two supersonic commercial transport airplane models with identical outer mold lines but different aeroelastic properties. One model featured wings with deflectable leading- and trailing-edge flaps and internal channels to accommodate static pressure tube instrumentation. The wings of the second model were of single-piece construction without flaps or internal channels. The testing was performed at Mach numbers from 1.6 to 2.7, unit Reynolds numbers of 1.0 million to 5.0 million, and angles of attack from -4 degrees to +10 degrees. The video model deformation system quantified the wing aeroelastic response to changes in the Mach number, Reynolds number concurrent with dynamic pressure, and angle of attack and effectively captured the differences in the wing twist characteristics between the two test articles.

Reviews

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