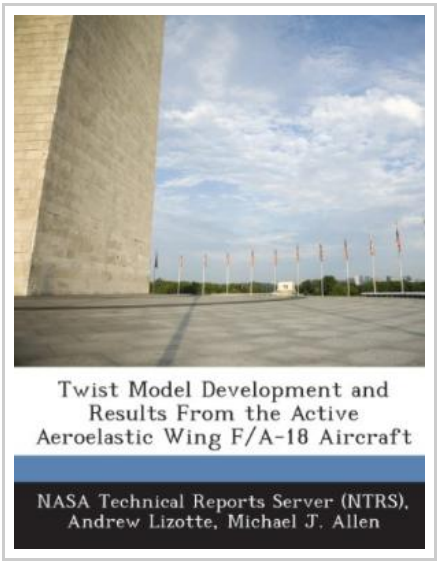

Twist Model Development and Results from the Active Aeroelastic Wing FA-18 Aircraft

By Michael J. Allen

Bibliogov. Paperback. Book Condition: New. This item is printed on demand. Paperback. 38 pages. Dimensions: 9.7in. x 7.4in. x 0.1in.Understanding the wing twist of the active aeroelastic wing FA-18 aircraft is a fundamental research objective for the program and offers numerous benefits. In order to clearly understand the wing flexibility characteristics, a model was created to predict real-time wing twist. A reliable twist model allows the prediction of twist for flight simulation, provides insight into aircraft performance uncertainties, and assists with computational fluid dynamic and aeroelastic issues. The left wing of the aircraft was heavily instrumented during the first phase of the active aeroelastic wing program allowing deflection data collection. Traditional data processing steps were taken to reduce flight data, and twist predictions were made using linear regression techniques. The model predictions determined a consistent linear relationship between the measured twist and aircraft parameters, such as surface positions and aircraft state variables. Error in the original model was reduced in some cases by using a dynamic pressure-based assumption and by using neural networks. These techniques produced excellent predictions for flight between the standard test points and accounted for nonlinearities in the data. This report discusses data processing techniques and twist...

Reviews

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