



Loads Model Development and Analysis for the FA-18 Active Aeroelastic Wing Airplane

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Bibliogov. Paperback. Book Condition: New. This item is printed on demand. Paperback. 26 pages. Dimensions: 9.7in. x 7.4in. x 0.1in. The Active Aeroelastic Wing airplane was successfully flight-tested in March 2005. During phase 1 of the two-phase program, an onboard excitation system provided independent control surface movements that were used to develop a loads model for the wing structure and wing control surfaces. The resulting loads model, which was used to develop the control laws for phase 2, is described. The loads model was developed from flight data through the use of a multiple linear regression technique. The loads model input consisted of aircraft states and control surface positions, in addition to nonlinear inputs that were calculated from flight-measured parameters. The loads model output for each wing consisted of wing-root bending moment and torque, wing-fold bending moment and torque, inboard and outboard leading-edge flap hinge moment, trailing-edge flap hinge moment, and aileron hinge moment. The development of the Active Aeroelastic Wing loads model is described, and the ability of the model to predict loads during phase 2 research maneuvers is demonstrated. Results show a good match to phase 2 flight data for all loads except inboard and outboard leading-edge flap hinge...



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