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## Disturbance Observer : Design and Flight Test of a Large Envelope Flight Controller

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By Air Force Institute of Technology (U. S. ). Graduate School of Engineering and Management

Biblioscholar Sep 2012, 2012. Taschenbuch. Book Condition: Neu. 246x189x7 mm. This item is printed on demand - Print on Demand Neuware - A new flight controller was evaluated through piloted simulation and flight test conducted at the USAF Test Pilot School. The controller, commonly called a disturbance observer, uses inertial sensor feedback routed through a simple control architecture that acts to force the desired response while rejecting sensor noise and atmospheric disturbances. The investigation included both handling qualities testing in the Octonian simulator at the Air Force Research Laboratories Air Vehicle Directorate, and initial flight test conducted as part of a Test Management Project at the USAF TPS. Simulation produced positive results with desired performance throughout a wide flight envelope. In addition, the desired response of the aircraft was easily modified by changing variables within the controller. Flight test was conducted on the Variable-stability In-flight Simulator and Test Aircraft (VISTA). Twelve test sorties totaling 16.4 flight hours were conducted and culminated in multiple landings at Edwards AFB, CA. Time delay inherent in the VISTA resulted in the requirement to gain down the control surface command signal. Sensor noise was amplified and caused a control surface 'buzz.' Flying qualities exhibited lower...



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