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Experimental Investigation into the Aerodynamic Ground Effect of a Tailless Chevron-Shaped UCAV

By Brett L. Jones

Biblioscholar Okt 2012, 2012. Taschenbuch. Book Condition: Neu. 246x189x8 mm. This item is printed on demand - Print on Demand Neuware - This experimental study adequately identified the ground effect region of an unmanned combat air vehicle (UCAV). The AFIT 3' x 3' low-speed wind tunnel and a ground plane were used to simulate the forces and moments on a UCAV model in ground effect. The chevron planform used in this study was originally tested for stability and control and the following extends the already existing database to include ground effects. The ground plane was a flat plate mounted with cylindrrindrical legs. To expand the capabilities of the AFIT 3' x 3' low-speed wind tunnel, hot-wire measurements and flow visualization revealed an adequate testing environment for the use of the ground plane. Examination of the flow through the test section indicated a significant difference in test section transducer velocity and the hot-wire measured velocity. This disparity along with the velocity difference due to the ground plane were accounted for as wind tunnel blockage. In addition, the flow visualization revealed the horseshoe vortices that built up on the front two mounted legs of the ground plane. The ground effect region for...



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