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EVALUATION of RECURSIVE METHODS FOR AIRCRAFT PARAMETER ESTIMATION

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Abstract

Within the framework of the German ASTRA (Advanced Systems & Technologies for RLV Application) program, the Phoenix project was established to implement experimental steps towards the development of a next generation space transportation system. The Phoenix vehicle was designed to flight demonstrate the automatic and un-powered horizontal landing of a representative, winged reusable launcher vehicle (RLV). The shape of the test vehicle was derived from the suborbital RLV concept Hopper. Three automatic landing tests were completed successfully in May 2004. Methods of system identification were applied to the flight data to evaluate the performance and to improve the design models and databases for future applications. A specific emphasis was placed on the evaluation of the on-board navigation system, air data sensor, aerodynamic model, landing gear effects and ground roll characteristics. This paper gives a brief overview of the Phoenix mission and elaborates on the flight data analysis and of the preceding wind tunnel campaigns, to allow a comparison of results from different approaches.

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