GRID METHOD BASED STORE SEPARATION SUITE USING PARANAM MESH FREE SOLVER

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Abstract

A store separation suite based on Point Prediction methodology was developed at CSIR-National Aerospace Laboratories (NAL) using PARANAM (Parallel NAL MCIR) mesh free CFD solver along with 6-DOF code and dynamic point cloud pre-processor [7,8]. This store separation suite is well validated and tested and is being used widely for various strategic store separation projects at CSIR-NAL [7,8]. However, in some scenarios point prediction based method is difficult to employ owing to either large number of trajectory studies or time and resource requirements. In such scenarios a quick but sufficiently accurate method is needed. The Grid method which is an approximate method based on aerodynamic database has been used to develop a store separation suite to achieve the same. In this work we have exploited mesh free nature of PARANAM solver to generate the aerodynamic database required for Grid method efficiently. The suite has been applied to standard Eglin test case for carrying out validation. Further we have demonstrated the utility of such a tool in parametric studies for assessing sensitivity.

Keywords: Grid Method, Point Prediction Method, Store Separation, 6-DOF, Mesh-free Solver