

ASSESSMENT OF OPENFOAM SOLVERS IN AEROSPACE APPLICATIONS

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Abstract. Since its release openFoam (Open Field Operation and Manipulation) libraries, have been used for performing numerical simulations in a wide range of fluid dynamics problems. Initially, most of them in the subsonic range, however most recently, openFoam capabilities through implementation of different numerical techniques have been extended and focused on solving high speed compressible flow patterns. Between these techniques are highlighted: extension of PISO method, flux difference splitting techniques that involve Riemann solvers and flux vector splitting techniques that avoid the use of Riemann solvers (Kurganov central schemes and AUSM family schemes). In this paper, results applying them to problems of aerospace interest, (e.g blunt body, air intake, jet exhaust and impingement, etc.) are presented, and the advantages and failures of their application in the context of openFoam, are analyzed and discussed.