Asociación Argentina
de Mecánica Computacional

Mecánica Computacional Vol XXXVIII, págs. 963-963 (resumen)
H.G. Castro, J.L. Mroginski, R.R. Paz, M.A. Storti (Eds.)
Resistencia, 1-5 Noviembre 2021

IMPLEMENTATION AND VALIDATION OF A SECOND-MOMENT RANS TURBULENCE MODEL IN OPENFOAM

Juan P. Saldía[a], Sergio A. Elaskar[a,b], Luis F. Gutiérrez Marcantoni[a,c] and Pascal Bruel[d]

[a]*Departamento de Aeronáutica, Facultad de Ciencias Exactas, Físicas y Naturales, Universidad Nacional de Córdoba, jsaldia@unc.edu.ar*

[b]*Instituto de Estudios Avanzados en Ingeniería y Tecnología, IDIT-UNC-CONICET, idit@fcefyn.unc.edu.ar; http://www.inv.idit.efn.uncor.edu*

[c]*Universidad Católica de Córdoba, Facultad de Ingeniería, Av. Armada Argentina 3555, Córdoba, Argentina*

[d]*CNRS - University Pau Pays Adour, LMAP - Inria CAGIRE Team, Av. de l'Université, 64013 Pau, Francia*

Keywords: Second-moment closure, turbulent flow, OpenFOAM.

Abstract. The implementation and validation of the second-moment Elliptic Blending Reynolds Stress Model (EB-RSM) proposed by Manceau and Hanjalic is presented. The EB-RSM implementation is based on the finite-volume method available in the open-source OpenFOAM framework. Simulation results are compared against high-fidelity numerical solutions corresponding to test cases selected from the ERCOFTAC database involving flows with attached and separated boundary layers and streamline curvature effects. The performance of the second order model is also assessed by comparison with results obtained with low-Reynolds eddy-viscosity turbulence models.