Abstract Submitted
for the DFD13 Meeting of
The American Physical Society

Wall-modeled large eddy simulation of high-lift devices from low to post-stall angle of attacks[1] JULIEN BODART, Universite de Toulouse, ISAE, JOHAN LARSSON, Department of Mechanical Engineering, University of Maryland, PARVIZ MOIN, Center for Turbulence Research, Stanford University — The flow around a McDonnell-Douglas 30P/30N multi-element airfoil at the flight Reynolds number of 9 million (based on chord) is computed using LES with an equilibrium wall-model with special treatment for transitional flows. Several different angles of attack are considered, up to and including stall, challenging the wall-model in several flow regimes. The maximum lift coefficient, which is generally difficult to predict with RANS approaches, is accurately predicted, as compared to experiments performed in the NASA LPT wind-tunnel.

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Date submitted: 02 Aug 2013   Electronic form version 1.4