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Large eddy simulation of a wing-body junction flow[1] SUNGMIN RYU, MICHAEL EMORY, ALEJANDRO CAMPOS, Stanford University, KARTHIK DURAISAMY, University of Michigan, GIANLUCA IACCARINO, Stanford University — We present numerical simulations of the wing-body junction flow experimentally investigated by Devenport & Simpson (1990). Wall-junction flows are common in engineering applications but relevant flow physics close to the corner region is not well understood. Moreover, performance of turbulence models for the body-junction case is not well characterized. Motivated by the insufficient investigations, we have numerically investigated the case with Reynolds-averaged Naiver-Stokes equation (RANS) and Large Eddy Simulation (LES) approaches. The Vreman model applied for the LES and SST k-ω model for the RANS simulation are validated focusing on the ability to predict turbulence statistics near the junction region. Moreover, a sensitivity study of the form of the Vreman model will also be presented.

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