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Boundary layer flow over streamwise grooves CARLOS MARTEL, JUAN ÁNGEL MARTÍN, Universidad Politecnica de Madrid, DENLIA TEAM — We use the Reduced Navier-Stokes (RNS) equations for the simulation of the nonlinear evolution of a zero pressure gradient boundary layer flow over a grooved bottom wall. The RNS formulation provides Reynolds independent solutions that are asymptotically exact in the limit $Re \gg 1$. It requires much less computational effort than DNS and it is numerically more robust than nonlinear PSE. We present results for the different flow patterns that appear depending on the spanwise period of the grooves and their cross section profile. And we discuss the idea of using the grooves to induce transversal motion in the boundary layer in order to produce a stabilization effect similar to the one induced by the streaks in a flat plate boundary layer.

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