RNS streak description CARLOS MARTEL, JUAN ANGEL MARTIN, ETSI Aeronauticos, Universidad Politecnica de Madrid, SPAIN — We use the Reduced Navier-Stokes (RNS) equations for the simulation of the nonlinear evolution of streaks in a flat plate boundary layer. The RNS are asymptotically derived from the Navier Stokes equations for $Re \gg 1$, and they are appropriated for flow configurations with one slow scale and two short scales. We derive the RNS with the appropriate boundary conditions for the simulation of the spatially growing streaks, comment the details of the numerical method used, and compare our 3D streak simulations with the results present in the literature. The presented RNS scheme for computing nonlinear streaks is much faster than full 3D DNS computations, and does not exhibit the numerical instabilities present in previous nonlinear PSE calculations.

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