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Low-Dimensional Dimensional Description of Klebanoff Modes MARIA HIGUERA, JOSE VEGA, Universidad Politecnica de Madrid, E.T.S.I.Aeronauticos — The spanwise evolution of a generic Klebanoff mode in a three-dimensional boundary layer attached to a flat plate is examined. These modes are known to be induced by free stream turbulence and correspond to three-dimensional perturbations of the (two-dimensional) steady Blasius solution, and exhibit low-frequency and long-wavelength perturbations in the streamwise direction, but oscillate rapidly in the spanwise direction. We present a low-dimensional Galerkin description of the Klebanoff modes. The comparison with results obtained through an optimization procedure applied to the adjoint problem (Luchini, JFM 2000), seems to indicate that the development of the instability may be understood on the basis of amplitude equations associated with the relevant Galerkin modes.

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