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Laminar streak enhancement using streamwise grooves CARLOS MARTEL, JUAN ÁNGEL MARTÍN, Universidad Politécnica de Madrid — Laminar streak promotion in a flat plate boundary layer results in an increase of the stability of the Tollmien-Schlichting waves with respect to that of the 2D Blasius profile. This stabilization delays the laminar-turbulent transition, increasing the laminar phase of the flow. The stabilization effect is stronger for higher streak amplitudes, and therefore simple ways of generating high amplitude stable streaks are sought to be used as boundary layer flow control methods. In a recent experiment [Tallamelli & Franson,AIAA 2010-4291] high amplitude stable steady streaks have been produced using Miniature Vortex Generators (MGVs), where one array of MGVs is used to excite the streak and a second array is used downstream to enhance their amplitude. In this presentation we numerically explore the possibility of enhancing the streaks using a different passive mechanism: streamwise grooves carved in the plate. We will present some numerical simulations for different values of the spanwise period of the streaks and of the grooves, and we will show the combinations that provide maximum streak amplitude.

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