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**Numerical simulations and linear stability analysis of a boundary layer developed on wavy surfaces** LORENZO SICONOLFI, SIMONE CAMARRI, University of Pisa, JENS H. M. FRANSSON, Linn Flow Centre, KTH Mechanics — The development of passive methods leading to a laminar to turbulent transition delay in a boundary layer (BL) is a topic of great interest both for applications and academic research. In literature it has been shown that a proper and stable spanwise velocity modulation can reduce the growth rate of Tollmien-Schlichting (TS) waves and delay transition. In this study, we investigate numerically the possibility of obtaining a stabilizing effect of the TS waves through the use of a spanwise sinusoidal modulation of a flat plate. This type of control has been already successfully investigated experimentally [1]. An extensive set of direct numerical simulations is carried out to study the evolution of a BL flow developed on wavy surfaces with different geometric characteristics, and the results will be presented here. Moreover, since this configuration is characterized by a slowly-varying flow field in streamwise direction, a local stability analysis is applied to define the neutral stability curves for the BL flow controlled by this type of wall modifications. These results give the possibility of investigating this control strategy and understanding the effect of the free parameters on the stabilization mechanism. [1]Fransson, Downs and Sattarzadeh. TSFP-9,Melbourne 05/30-06/03,2015

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