

Abstract Submitted
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AFRODITE – passive flow control for skin-friction drag reduction using the method of spanwise mean velocity gradient¹ BENGT FALL-ENIUS, SOHRAB SATTARZADEH, ROBERT DOWNS, SHAHAB SHAHINFAR, JENS FRANSSON, KTH - Royal Institute of Technology — Over the last decade wind tunnel experiments and numerical simulations have shown that steady spanwise mean velocity gradients are able to attenuate the growth of different types of boundary layer disturbances. Within the AFRODITE research program different techniques to setup the spanwise mean velocity variations have been studied and their stabilizing effect leading to transition delay quantified. A successful boundary-layer modulator for transition delay has turned out to be the miniature-vortex generator and has been well documented during the past years. More recent ideas of setting up spanwise mean velocity gradients will be presented here. We show that, the non-linear interaction between a pair of oblique disturbance waves creating a streaky base flow, as well as the direct surface modulation by means of applying wavy surfaces in the spanwise direction, can both successfully be utilized for transition delay and hence skin-friction drag reduction.

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