

Abstract Submitted
for the DFD20 Meeting of
The American Physical Society

Active Drag Reduction for Flows over Swept Wings MARIAN ALBERS, WOLFGANG SCHRDER, Institute of Aerodynamics, RWTH Aachen University — The friction drag and hence the energy consumption of slender bodies in turbulent flows, e.g., large passenger aircraft, are strongly determined by turbulent boundary layers. Therefore, there is considerable scientific interest in influencing the turbulent flow field to decrease the viscous drag. Research nowadays focuses on active methods, i.e., the introduction of energy into the system to reduce skin friction. In most investigations, the direction of propagation is either perfectly perpendicular to the mean flow direction or along the mean flow direction. However, the flow, for instance, over a swept wing of an aircraft is subject to a spanwise pressure gradient, therefore incident angles of the flow towards the proposed surface waves are to be expected. As a consequence, in this work we consider a turbulent boundary layer flow subject to spanwise traveling transversal surface waves with sweep angles of up to 30 degrees. The results show that a general drag reduction effect persists, however, additional effects, e.g., increased pressure drag, have to be accounted for. A detailed analysis of the results will be presented at the conference.

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Date submitted: 03 Aug 2020

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