

Abstract Submitted
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Numerical Study of Impulse Actuated Stall Control SIGFRIED

HAERING, ROBERT MOSER, University of Texas at Austin — Experimental studies have shown that pulse actuated dynamic stall control provides a simple means to significantly increase the performance of lifting surfaces and expand their flight envelope. However, precise information of the complex boundary layer reattachment mechanisms are inaccessible to experimental measurements. Therefore, adequately resolved and validated simulations are necessary to fully understand and utilize this approach. Numerical studies using detached large eddy simulation (DES) of a stalled airfoil with both spanwise-uniform and staggered actuation regions experiencing single pulse actuated flow reattachment are performed. The results of these simulations provide fundamental insight into the stall control mechanisms observed in experiments. Such studies may be extended to design optimal actuator spacing, orientation, and scheduling.

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