

Abstract Submitted
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Investigation of Bio-Inspired High Lift Devices for Stall Mitigation¹ ESTEBAN HUFSTEDLER, BEVERLEY J. MCKEON, California Institute of Technology — A passive upper-surface flap has been shown to increase the lift on a wing after stall and reduce the severity of stall at a wide range of Reynolds numbers. Experiments at $Re=20,000$ have been conducted that examined the forces and flow fields around an airfoil with passively moving and static upper-surface flaps. Force measurements confirm the reported post-stall lift-enhancing effect. Particle image velocimetry measurements display the interaction of a significant region of reversed flow with the flap in the lift-enhancing regime. Application of proper orthogonal decomposition techniques to the velocity field data leads to identification of relevant timescales in the separated region and a quantification of the intermittency of vortex shedding that occurs after stall.

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