

Abstract Submitted
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Characterization of Vortex Development on a Pitching Plate¹

KEVIN WABICK, JAMES BUCHHOLZ, The University of Iowa — The formation and evolution of leading-edge vortices (LEVs) is ubiquitous on a broad range of aerodynamic structures and natural fliers, and can have a significant impact on aerodynamic loads. The formation of LEVs is considered on a pitching flat plate at a chord-based Reynolds number of 10^4 with varying dimensionless pitch rate through characterization of the sources and sinks of vorticity that contribute to their growth and evolution. The effect of pitch rate is examined, and the flow field evolution and measured fluxes of vorticity are compared to prior measurements on a purely plunging plate, to isolate the effects of rotation on the factors contributing to vortex strength and development.

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James Buchholz
The University of Iowa

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