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**Dynamics of Spanwise Vorticity on a Rotating Flat Plate** CRAIG WOJCIK, JAMES BUCHHOLZ, University of Iowa — Leading-edge vortex (LEV) structures were examined using phase-locking digital particle image velocimetry for two rotating flat plates with aspect ratios of 2 and 4. The plates were accelerated uniformly for approximately 45 $^\circ$ to a constant rotational speed. Reynolds numbers of 4,000, 8,000, and 16,000 were investigated. The flow field was measured in chordwise planes at two spanwise positions, while varying angle of attack and azimuthal position of the plate. The results show a concentrated, stationary vortex structure at the leading-edge of the plate. The strength of the leading edge vortex (LEV) was found to vary with azimuthal position, Reynolds number, and angle of attack. The time variation in LEV strength is studied using a control volume analysis taking into account in-plane and out-of-plane vorticity fluxes as well as interactions with opposite-sign vorticity generated beneath the LEV on the plate surface.

James Buchholz
University of Iowa

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