

Abstract Submitted
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Vortex arrangement in the wake of rigid and flexible rapidly pitching airfoils at low Reynolds number¹ BRUNO MONNIER, AHMED NAGUIB, MANOOCHHEHR KOOCHESEFAHANI, Michigan State University — An experimental investigation of the wake of an airfoil undergoing rapid pitch oscillation is conducted in a water tunnel at a chord Reynolds number of about 2000. Flow visualization is utilized to characterize the vortical patterns in the wake of the airfoil, which is constructed from a NACA 0036 profile fitted with an extended trailing edge with controllable flexibility. The spatial configuration of the vortices is extracted in terms of streamwise and cross-flow spacing over a range of pitching frequencies and amplitudes. We discuss how different levels of flexibility alter the vortex spacing parameters and the conditions under which the traditional Karman vortex pattern, corresponding to a wake profile, changes to the reverse Karman pattern associated with a jet profile.

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