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Experimental Investigation of Dynamic Stall on a NACA0012 Airfoil Undergoing Sinusoidal Pitching[1] DOUGLAS BOHL, Clarkson University, MELISSA GREEN, Syracuse University — In this work, the flow field around a NACA0012 Airfoil undergoing large amplitude sinusoidal pitching is investigated using Particle Image Velocimetry (PIV). The airfoil is pitched symmetrically about the quarter chord point with a peak angle of 20 deg, at reduced frequencies of k=0.2-0.6 and Re_c =12000. Sixteen different Fields of View are phase averaged and combined to quantify the flow field from 0.75c upstream of the leading edge to 1c downstream of the trailing edge. This provides spatially and temporally resolved data sets that include the downstream evolution of the flow fields. The velocity and vorticity fields, both around the airfoil and downstream of the trailing edge, will be investigated as a function of the reduced frequency to better understand the dynamics (i.e. formation, separation and development) of the leading edge vortex and the resulting downstream flow evolution.

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