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Streamwise Oscillation of Airfoils into Reverse Flow KENNETH GRANLUND, North Carolina State University, ANYA JONES, University of Maryland, MICHAEL OL, Air Force Research Laboratory — An airfoil in freestream is oscillated in streamwise direction to cyclically enter reverse flow. Measured lift is compared to analytical blade element theories. Advance ratio, reduced frequency and angle of attack is varied within those typical for helicopters. Experimental results reveal that lift does not become negative in the flow reversal part, contradicting one theory and supported by another. Flow visualization reveal the leading edge vortex advecting against the freestream to a point in front of the leading edge.

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