

Abstract Submitted  
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**Suction and Blowing Boundary Layer Measurements on a Novel Micro-pump Equipped Wing** VICTOR MALDONADO, LUCIANO CASTILLO, Rensselaer Polytechnic Institute — A NACA-4412 airfoil wing section is outfitted with a micro-fluidic pump capable of providing span-wise, leading edge suction and blowing. The experiment is performed in a water tunnel for several free-stream test velocities. The detailed unsteady flow physics of the micro-pump/boundary layer interaction are explored via velocity profile measurements taken using a laser Doppler anemometer (LDA). Finally, a basis for comparison of the efficiency between this innovative micro-pump and other micro-fluidic devices like synthetic jets is formulated. We attempt to generate micro-pump equivalent synthetic jet performance parameters such as jet momentum coefficient to determine the feasibility of such a micro-pump in applications like flow control and boundary layer separation control.

Victor Maldonado  
Rensselaer Polytechnic Institute

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