

Abstract Submitted
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Aerodynamic Control of a Wing at Low Angles of Attack using Synthetic Jets and a Gurney Flap¹ PATRICK SHEA, DOUGLAS SMITH, University of Wyoming — Experimental tests were performed on a symmetric wing at low angles of attack to determine the effectiveness of pairing an array of synthetic jet actuators with a Gurney flap for active, aerodynamic flow control of the wing. Sectional lift and quarter-chord pitching moment data were acquired at $Re_c = 1.45 \times 10^5$ for different configurations of the Gurney flap and synthetic jet array. For configurations where significant aerodynamic control was observed, the flow physics in the vicinity of the flap and actuators were investigated with PIV. The net effect of the Gurney flap and synthetic jet actuator control scheme was an increase in the wing section lift and a corresponding decrease in the pitching moment. These effects were the result of an increase in the circulation of the wing section by a modification of the trailing edge flow with the synthetic jet control.

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