

Abstract Submitted  
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**A New Sliding Discharge Actuator for Aerodynamic Flow Control** LEE NEUHARTH, FLINT THOMAS — The application of a three-electrode (triode) sliding discharge (TSD) actuator for aerodynamic flow control is examined. The sliding discharge actuator is a hybrid that combines the effects of both a DC corona and dielectric barrier discharge. In the configuration examined in this study, two surface mounted electrodes are placed strategically on the aerodynamic body. One is held at ground and the other is at a large negative DC bias voltage. A third electrode spanning the distance between the two surface electrodes is placed below a dielectric barrier material and is given a high-voltage AC signal. This produces a glow discharge on the aerodynamic surface in the space between the surface electrodes and there is an associated coupling of directed momentum to the ambient fluid that is the basis for flow control. Two example flow control applications of the TSD are considered: (1) the boundary layer on a flat plate and (2) separation control on a symmetric airfoil. Results from both flow control studies are summarized.

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