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A Parametric Study of Plasma Vortex Generators for Active Flow Control MICHAEL WICKS, ERAS NOEL, FLINT THOMAS, THOMAS CORKE, University of Notre Dame — The performance of plasma streamwise vortex generators (PSVG) based on a dielectric barrier discharge is characterized experimentally. A PSVG array is flush mounted on a turbulent boundary layer development plate, which allows control of the flow conditions upstream. The performance of the PSVG is characterized by nonintrusive flow field measurements utilizing both LDV and PIV. The primary metric for characterizing the performance of the PSVG is the magnitude of streamwise vorticity produced. Through a series of experiments the influence of applied voltage, length of surface electrode, inter-electrode spacing, electrode geometry, yaw angle to the oncoming flow and Reynolds number on PSVG performance is documented. The results are compared to passive vortex generators under comparable flow conditions.

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