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Non-intrusive Diagnostics of Dielectric Barrier Discharge Plasma Actuator JOSHUA STULTS, RICHARD HUFFMAN, US Air Force Institute of Technology — Dielectric Barrier Discharge (DBD) plasma actuators are an emerging possibility for active flow-control in low-speed, atmospheric pressure aerodynamics. They rely on imparting small amounts of momentum into the boundary layer, which can delay separation and increase lift at critical conditions such as stall in an airfoil or off-design conditions in a turbine. This work incorporates a numerical wave-propagation model into an optimization framework to integrate multiple interferometry measurements into a reconstruction of the spatial variation of electron density in the DBD plasma.

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