

Abstract Submitted  
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**Single Dielectric Barrier Discharge Plasma Actuator Modelling using a Charge Transport Approach** THEODORE WILLIAMS, THOMAS CORKE, University of Notre Dame — Single dielectric barrier discharge (SDBD) plasma actuators have been used in active flow control due to their benefits of high response rate, no mechanical parts, and low cost. To effectively model the aerodynamic effects of a SDBD using computational fluid dynamics, a numerically efficient model of SDBD plasma actuator parameters is required. This work presents a charge transport model that is able to simulate the dynamic characteristics of an AC plasma actuator and calculate the time-dependent body force vector distribution. This work improves upon previous models by being able to simulate high-curvature electrode surfaces. Validation of this work is performed by comparison to experimentally measured thrust values.

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