

Abstract Submitted  
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**Experimental Investigations Of A Pressure Anomaly In The Operation Of A Synthetic Jet Actuator.**<sup>1</sup> RICK CRESSALL, University of Notre Dame, TIM PERSOONS, Trinity College Dublin, KENNETH CHRISTENSEN, University of Notre Dame — Synthetic Jet Actuators (SJA) are used in a growing number of flow control applications ranging from flow separation, thermal management, to noise control in aviation. An SJA operates by oscillating a flexible membrane inside a cavity connected to a nozzle. This yields a steady train of vortices that produces momentum transfer that mimics a turbulent jet produced from a nominal nozzle. Due to the complex physics involved in the interaction between an SJA and its surroundings, a reduced-order model can be used to reliably operate an SJA independent of external disturbances or minor changes in the driver characteristics. Development of these reduced order models are an active area of research. Recent work has identified a pressure anomaly that is unexplained and unaccounted for by current models. This work attempts to understand and explain the physics of the pressure anomaly using experimental methods to better improve the reduced order models. Phase-locked displacement measurements of the flexible membrane are acquired at multiple locations using a laser displacement sensor

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