

Experimental Optimization of Induced Velocity for Plasma Actuator with Multiple Encapsulated Electrodes

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1 ABSTRACT

In many experimental and numerical problems, the physical behaviours of a system should be quantified and a configuration for obtaining the optimal condition should be obtained. To realize this, a set of informative experiments is performed to represent the system condition. Most of the test setups in this context are currently set by an ad-hoc procedure. However, for many experimental and some numerical investigations, this is both timely and computationally expensive. In this study, we have used surrogate modelling based optimisation technique to find a new configuration of plasma actuator for maximizing the velocity of the airflow. This allows an effective investigation in setting the small while enough number of experiments and finding the optimal plasma configuration. Using this experimental optimisation technique, one is able to consider the uncertainty in observation and find a reliable approximate model for the induced velocity for optimisation.