

Abstract Submitted
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Reduction of aerodynamic friction drag of moving bodies using a Microwave-Dielectric-Barrier-Discharge actuator controlling the boundary layer THIERY PIERRE, CNRS Paris & Marseille — A new plasma device named M-DBD (Microwave Dielectric Barrier Discharge) is used for controlling the boundary layer in order to reduce the drag force. A compact resonant UHF structure comprising a resonant element in the form of a quarter-wave antenna creates a mini-plasma insulated from the UHF electrodes by mica sheets. Additional electrodes induce an electric field in the plasma and transiently move the ions of the plasma. The high collision rate with the neutral molecules induce the global transient flow of the neutral gas. The temporal variation of the applied electric field is chosen in order to obtain a modification of the local boundary layer. First tests using an array of M-DBD plasma actuators are underway (see Patent ref. WO 2014111469 A1).

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