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Reduction of drag acting on the Ahmed body using plasma actuators FUKA MATSUMURA, RYOSUKE ODA, JUN SAKAKIBARA, Meiji University — Ahmed body is a scientific model of automobile, and it is known that the rear end of this model has an important role in aerodynamic characteristics such as drag and the wake structure. In this study, we used a dielectric barrier discharge plasma actuator array (DBD-PA) at the rear end of the Ahmed body with a slant angle of $\phi = 25°$ and $35°$ to control the drag acting on the model. The experiment was conducted in the wind tunnel at $Re = 3.95 \times 10^4$. The DBD-PA were uniformly installed in the spanwise direction at the edge between the slant surface at the rear end and the roof, and burst control was applied by changing the excitation frequency (burst frequency f^+) and the ratio (burst ratio, BR). As a result, at $\phi = 25°$under $f^+ \leq 400$Hz, the drag coefficient tends to decrease as BR increases. However, when $f^+ = 1000$Hz, where the burst frequency was large, drag was most reduced at $BR = 30\%$. The drag coefficient hardly decreased at $\varphi = 35°$. We hope to present a results of the one-dimensional array of the DBD-PA, which introduce disturbance distributed in the spanwise direction with the temporal phase difference allowing to create lambda type vorticies into the shear layer.

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