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等离子激励器对静止空气的诱导作用

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Investigation of Plasma Inducing Static Air Flow

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摘要 对等离子体发生器对静止空气诱导加速作用进行了数值模拟，并与Notre Dame大学的相关实验结果进行了比较，二者符合良好.研究结果表明，等离子体发生器对静止空气有诱导加速作用，激励强度、等离子体发生器尺寸等对流体的诱导有较大影响.该研究成果可用于飞行器的减阻增速、流动分离控制及推力矢量控制等.

关键词: 等离子体发生器 磁流体 电流体 流动控制

Abstract: In this paper,plasma inducing static air flow is investigated,in which the plasma is generated by a high-voltage RF (radio frequence) actuator and the affection of different plasma actuator excitation intensities, size and situation to the flow field are analyzed.The investigative results show that the plasma actuator can induce and accelerate the static air flow, the flow accelerative character of the plasma actuator is significant and can be used to control flow, such as drag-reduction and acceleration of the vehicle,flow separation control of the engine inlet,or thrust-vectoring control of engine exit flow.

Key words: plasma actuator; magnetofluid electrofluid flow control

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