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推力矢量发动机燃气舵气动性能分析

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Analysis of Aerodynamic Performance of Et Vane of Thrust-vector Motor

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摘要

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摘要 采用六分力试验技术对某推力矢量发动机燃气舵的气动特性进行了试验研究。试验测得燃气舵舵片上的力和绕舵片转轴的力矩等参数。结合计算流体力学方法,采用非结构化网格技术对相应的燃气舵绕流流场进行了数值分析,计算结果与试验数据符合较好。计算还给出了舵片所受力矩随舵片偏转角的变化规律。所得结论对相关领域的工程研究具有较大的指导意义。

关键词: 推力矢量 燃气舵 试验 数值模拟 六分力

Abstract: The aerodynamic properties of thrust-vectoring et vane are studied by six-component forces test and all the forces on the vane flake and the force moments around the vane flake axes are obtained. The numerical simulations on the around flow of et vane are carried out by using the fluid mechanics principle and non-structure grid technique. The simulation results are in better agreement with those of the test. The change curves of all the forces and the force moments on the vane flake with rotation angles of et vane are also given by the numerical simulations. The calculation results are instructive to the engineering research of thrust-vectoring et vane and it's related field.

Keywords: thrust-vector et vane tests numerical simulation six-component forces

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