

机械科学

FL-26风洞模型支撑系统动态仿真分析

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摘要:

研制具有良好力学特性的大迎角模型支撑系统,是解决先进、高机动飞行器大迎角气动力问题的关键技术之一。阐述了FL-26风洞大迎角模型支撑系统结构形式,对系统的动态特性和动力响应进行了有限元分析,获得了大迎角模型支撑系统自由振动时的模态频率和模态振型,以及试验段气动噪声作用下的加速度响应和动应力。仿真结果表明:大迎角模型支撑系统动态特性较好,不同方向的动力响应主频及均方根值分布较为离散且数量级相差较大,未出现共振现象。

关键词:

风洞;模型支撑系统;模态分析;动态响应

Dynamic Simulation Analysis of Model Support System in FL[STBZ]-[STHZ][WTHZ] 26 Wind Tunnel

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Abstract:

Developing the high angle of model support system with nicer mechanics characteristics is among the key technologies for researching aircraft weapons which are advanced and high mobile.The structural forms of high angle of model support system in FL-26 wind tunnel were expounded.The dynamic characteristics and dynamic response of the high angle of model support system in FL-26 wind tunnel were analyzed,and the modal frequencies and shapes at the vibration with natural frequency,and the acceleration response and dynamic stress response at the aerodynamic noise were obtained.These results show that the high angle of model support system in FL-26 wind tunnel has good performance of dynamic characteristics and main frequency is in different directions and scalar level of RMS value is quite distinctness.

Keywords: wind tunnel;model support system;modal analysis;dynamic response

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