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飞控系统最坏情况分析研究方法研究

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Study on Worst Case Analysis Method for Flight Control System

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摘要

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摘要 提出了飞控系统在其主要影响因素(自然风、推力偏心、控制参数偏差、结构误差等)的作用下进行最坏情况分析的方法。给出了飞控系统最坏情况法整体分析流程,建立了自然风、发动机推力偏心、控制参数偏差和几类主要结构误差的扰动模型。提出了利用直接代入法和正交试验相结合的方法辅助最坏情况进行分析,并给出了详细算法流程。最后以某飞控系统为案例验证了该方法的正确性和可行性。

关键词: 最坏情况分析 风 推力偏心 控制参数偏差 结构误差 可靠性仿真 飞控系统

Abstract: This paper puts forward the technique of worst case analysis for flight control system under the influence of some important factors. The integrated processs of worst case analysis is given. The disturbance models of wind, thrust deviation, control parameters error and structure errors are established. Then the method of combining the direct substituting with orthogonal test for worst case analysis is presented, and the detailed algorithm process is represented. Then the method is verified by using a flight control system as an example

Keywords: worst case analysis wind thrust deviation control parameters error structure error reliability simulation flight control system

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