论文　　　　　　　　　　最新目录 | 下期目录 | 过刊浏览 | 高级检索　　　　<< Previous Articles | Next Articles >>

航空发动机全程滑态模型跟踪控制研究

赵庆荣, 樊丁

西北工业大学航空动力与热力工程系 陕西西安 710072

Aero Engine Global Variable Structure Model Following Control Sys tem

ZHAO Qing-rong, FAN Ding

Department of Aeroengine and Thermal Power Engineering; Northwestern Polytechnical University; Xi'an 710072; China

摘要	参考文献	相关文章

Download: PDF (177KB)　　HTML 0KB　Export: BibTeX or EndNote (RIS)　　Supporting Info

摘要 将全程滑态变结构模型跟踪控制首次应用于航空发动机系统,设计出了航空发动机全程滑态模型跟踪控制器。采用二次状态反馈法规划的参考模型不仅满足性能指标要求和完全跟踪的模型匹配条件,同时也实现了完全解耦。由于全程滑态变结构控制消除了能达阶段,故能克服定常滑态变结构控制系统在此阶段对扰动的敏感性,并且其控制律的设计可以改善系统的瞬态性能,克服扰动和未知参数摄动的影响。结果表明:所设计的系统能取得令人满意的控制效果,能有效地抑制干扰和参数摄动的影响, 具有强的鲁棒性。

关键词: 模型跟踪控制　全程滑态控制　参考模型　航空发动机

Abstract: Global Variable Structure Model Following Control (GVSMFC) Theory, a new variable structure controlapproach, is introduced to aero engine control systems. This approach can efficiently shorten the time during whichsystem initial states reach the sliding model, overcome the sensitivity of Constant Variable Structure Control (CVSC)to uncertainties during this period, and thus enhance the robustness of the system. Furthermore, The design of itscontrol principle also improves transient performance of the system. Based on this theory, an aero engine GVSMFCsystem is designed and studied. The reference model designed via the state feedback method meets the performancetargets and theory-matching requirements in addition to complete uncoupling. It is shown that the control systemhas good following performance, and possesses strong ability of anti2disturbance and anti-variation of model parameters.

Keywords: variable structure control　model following control　aero engine

引用本文:

赵庆荣;樊丁. 航空发动机全程滑态模型跟踪控制研究[J]. 航空学报, 2003, 24(2): 107-110.

ZHAO Qing-rong;FAN Ding. Aero Engine Global Variable Structure Model Following Control Sys tem[J]. Acta Aeronautica et Astronautica Sinica, 2003, 24(2): 107-110.

Service
▶ 把本文推荐给朋友
▶ 加入我的书架
▶ 加入引用管理器
▶ Email Alert
▶ RSS

作者相关文章
▶ 赵庆荣
▶ 樊丁