

基于DSP的静电悬浮转子微陀螺测控系统

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摘要:

开发了一种基于数字信号处理器(DSP)的静电悬浮转子微陀螺的可视化闭环测控系统。该系统是在VC33DSP平台下,采用增量式PID算法控制器,对VC33DSP开发系统的外设A/D、D/A和PCI芯片进行编程应用。具体为:使用VC++编写可视化界面,对PCI芯片编程实现DSP与PC之间通信,使用VC33DSP汇编语言编程实现数据的输入输出。经编程测试,增量式汇编函数能够有效运行,为静电悬浮转子微陀螺的悬浮、旋转等检测控制实现奠定了一定的基础。

关键词: 微陀螺;测控系统;数字信号处理器;静电悬浮;转子

A detect and control system for micro gyroscope with levitated rotor based on DSP

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Abstract:

This thesis developps a visual control system for micro gyroscope with levitated rotor based on DSP. The system with Incremental PID control algorithm controller based on the development platform of VC33 DSP programs application codes about the peripheral chips of VC33 DSP. This system mainly includes the following parts: A visual interface is programmed using VC++. Communication in PC and DSP is attained by programming application codes to develop PCI chip. Using the specific assembly language for VC33, input and output of the data is achieved. Provided by the testing, Incremental assembly function can run effectively. It lays the foundation to complete the detection of levitation and rotation for the micromachined electrostatically suspended gyroscope.

Keywords: micro gyroscope;detect and control system; digital signal processor(DSP); electrostatic levitation;rotor

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