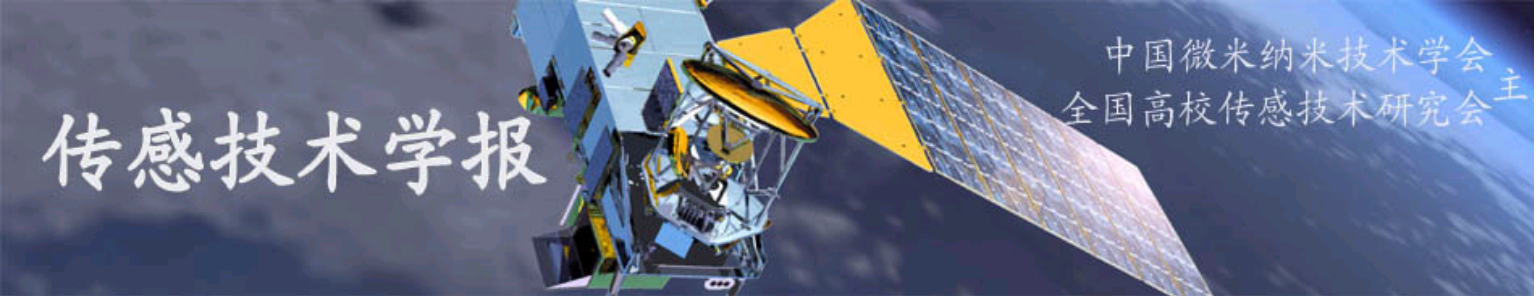

MEMS振动陀螺闭环自激驱动的理论分析及数值仿真

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摘　要：

对采用AGC(automatic gain control)控制实现的陀螺闭环自激驱动系统进行了理论分析，利用平均技术和相平面法求解出了MEMS振动陀螺闭环自激驱动系统的
条件以及幅度稳定条件的解析表达式，并进行了数值仿真验证。仿真结果很好地吻合了理论分析，本文的理论分析结果可用于指导自激驱动系统的硬件实现。

关键词：自激振荡，MEMS陀螺，AGC，PI控制

Theoretical Analysis and Numerical Simulation of Closed-Loop Self-Oscillation System for MEMS Vibratory Gyroscopes

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Abstract:

In this paper we analyze self-oscillation system with AGC(automatic gain control) for MEMS vibratory gyroscopes using averaging and phase-plane techniques, and pre
analytical equations for system design. Numerical simulations are implemented, and the simulation results show a good agreement with the analytical results. The analyti
equations can be used to direct the design of the closed-loop drive system in hardware.

Keywords: Self-Oscillation, MEMS Gyroscope, AGC, PI controller

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