一种双线振动硅微机械陀螺仪驱动检测电路设计

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摘　要：

以一种双线振动硅微机械陀螺仪为研究对象，设计了驱动、检测电路，达到了一定的性能要求。驱动模态使用自激振荡的闭环控制方式，使陀螺稳定工作在其固有频率上。在载波和驱动环节使用了一种AGC技术，实现了载波信号和驱动模态的幅度的高精度控制。使用二极管一次解调，简化了电路结构。检测部分使用了一种相位修正放大电路，有效减小了有用信号频率附近的幅相误差。

关键词：硅微机械陀螺仪 闭环 自激驱动 AGC 相位修正放大电路

Design on Drive and Sense Circuitry for a kind of Silicon Micro-machined Vibratory Gyroscope

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Abstract:

Based on a kind of Silicon Micro-machined Vibratory Gyroscope, the author designs drive and sense circuitry with good performance. Closed-loop drive scheme with self-drive-oscillation is used in the gyro’s driving mode in order to ensure the gyro’s driving mode vibrates stable on its resonant frequency. AGC technology is used to control the amplitude of signals in high precision both in carrier signal generation circuit and in driving mode of the gyro. Diode demodulator circuit is used to simplify the circuitry. In sensing mode, phase-corrected amplify circuit is provided with reduced phase and gain errors around the information frequency.

Keywords: Silicon Micro-machined Vibratory Gyroscope; closed-loop ; self-excited oscillation; phase-corrected amplify circuit ; AGC

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