



THE VIBRATION AND MEASUREMENT OF DRIVING MODE OF THE TWO-STAGE DECOUPLED MICRO-MACHINED GYROSCOPE

Yao Fenglin^{1,2}, Gao Shiqiao¹, Zhao Jie³, Liu Haipeng¹, Niu Shaohua¹, Jin Lei¹

¹School of Mechatronical Engineering, Beijing Institute of Technology, Beijing, China,

²Taiyuan University of Science and Technology, Shanxi, China,

³Department of Computer Engineering, Taiyuan University, Shanxi, China,

Emails: yfl@bit.edu.cn, gaoshq@bit.edu.cn, tydxcomputer@163.com, lhp@bit.edu.cn, shh@bit.edu.cn.

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Abstract- This paper introduces the working principle of the two-stage decoupled micro-machined gyroscope, and establishes the vibration equation of the driving mode. By solving the differential equation, the analytical solution and the amplitude-frequency characteristics of the driving mode are obtained. By the visual measurement based on high-speed photography and the post image processing, it measures the natural frequency of the driving mode of the micro-machined gyroscope. And it measures the damping coefficient in time domain and frequency domain respectively using this method. The comparison to the theoretical solution proves that the method is effective and accurate; it will help the study for the micro-machined gyroscope vibration and provides a new way to measure MEMS.

Index terms: decoupled, micro-machined gyroscope, driving mode, vibration, measurement.