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IJCA Proceedings on International Conference  
on Innovations In Intelligent Instrumentation, Optimization and Electrical Sciences

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ICIIOES - Number 13

Year of Publication: 2013

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{bibtex}iciioes1671.bib{/bibtex}

## Abstract

Ring Laser Gyroscope (RLG) which uses the principle of Sagnac effect is a sensor to sense angular information very precisely. In order to get excellent performance from Ring Laser Gyroscope, Intensity of laser beams, Cavity Path length and also Dithering mechanism needs to be ultra stable and maintained consistently. Hence control algorithms and hardware is implemented in RLG's for these three controls. Most of the algorithms implemented are linear and simple in nature. It is felt to use non linear algorithms based on the dynamics [1] of the RLG to improve performance of an RLG. So in this paper it is proposed to study the principles involved in an RLG control and simulate the dynamics for understanding the

non-linearities and finally design new control algorithms for controlling the RLG. MATLAB/LabVIEW are proposed to be used for realizing these algorithms and finally implement them in DSP. And also this signal processing is emulated in LabVIEW software and finally implemented on FPGA. This system is used in Missile guidance and control systems, Robotics and Spacecrafts for tracking, balancing and controlling the motion.

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## Index Terms

Computer Science

## Keywords

Ring Laser Gyro Path Length Control Fpga