Abstract

Ring Laser Gyroscope is a single axis laser gyro angle sensor designed and developed for high accuracy launch vehicle navigation systems. They are well suited for high precision strap down Inertial Navigation Systems (INS) due to very high accuracy, high bias, scale factor stability, low scale factor non-linearity and wide dynamic range. A ring laser gyroscope consists of a ring laser having two counter propagating modes over the same path in order to detect rotation. It operates on the principle of Sagnac effect which shifts the nulls of the internal standing wave pattern in response to angular rotation. The interference between the counter propagating beams, observed externally, reflects shifts in that standing wave pattern, and thus rotation. This paper presents a survey of ring laser gyroscope technology, the factors affecting its performance and techniques to overcome the limitations of lock-in effect.

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A Survey on Ring Laser Gyroscope Technology

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Index Terms

Computer Science
Information Science

Keywords
Strap down Rotation rate Dither Lock-in Beat frequency