

Abstract Submitted
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Noise reduction in ^{87}Rb - $^{129}\text{Xe}/^{131}\text{Xe}$ atom spin gyroscopes based on parametric modulation SANGKYUNG LEE, SIN HYUK YIM, DEOK YOUNG LEE, TAE HYUN KIM, KYUMIN SHIM, Agency for Defense Development — We analyze an ^{87}Rb - $^{129}\text{Xe}/^{131}\text{Xe}$ atom spin gyroscope based on parametric modulation. The parametric modulation enables either B_x sensitive mode or B_y sensitive mode, depending on the demodulation phase. The white noise is analyzed as a function of demodulation phases in parametric modulation. We achieve an angular random walk of $0.08 \text{ deg/hr}^{1/2}$ and a bias instability of 0.75 deg/hr in the B_x sensitive mode. The noise minimum mode reduces the angular random walk but it sometimes degrades the bias instability. We discuss how to reach the minimum angular random walk without degradation of the bias instability. Finally, we introduce our recent progress on development of ^{87}Rb - $^{129}\text{Xe}/^{131}\text{Xe}$ Atom Spin gyroscopes.

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