

Abstract Submitted
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Methods to Characterize Vapor Cell Performance for Nuclear Magnetic Resonance Applications JAMES MIRIJANIAN, California Polytechnic State University - San Luis Obispo, MICHAEL LARSEN, Northrop Grumman - Navigation Systems Division — The Advanced Sensors Development team at Northrop Grumman, Navigation Systems Division is developing a Nuclear Magnetic Resonance Gyroscope (NMRG). Various methods to measure atomic spin lifetimes in vapor cells for predicting NMRG performance have been investigated. Certain methods show clear advantages over others by reducing required testing times and improving test data resolution. New modifications of methods were also developed to study and improve the precision and repeatability of test results. These methods help correlate vapor cell performance to cell filling and sealing methods for cell fabrication process improvement. The vapor cells produced in conjunction with these techniques have exhibited significant and consistent increases in both the noble gas spin lifetimes and the NMR signal strengths compared to previous cell fabrication processes, providing more precise insight into cell development techniques.

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