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Applied Atom Interferometry: On the Fringe AKASH RAKHOLIA, Sandia National Laboratories, University of New Mexico, HAYDEN MCGUINNESS, Sandia National Laboratories, GRANT BIEDERMANN, Sandia National Laboratories, University of New Mexico — We demonstrate a dual-axis accelerometer and gyroscope atom interferometer via cold ensemble exchange [1]. The apparatus is capable of operating in a dynamic environment, due to the short time-of-flight $T \approx 4$ ms [2], with sensitivities at $\mu g/\sqrt{\text{Hz}}$ and $\mu\text{rad/s}/\sqrt{\text{Hz}}$ levels. Part of the sensitivity losses are mitigated due to operation at a high data-rate [3]. We explore various limitations to operation in a dynamic environment and enhancement of dynamic range using auxiliary sensors.

[1] A. V. Rakholia, H. J. McGuinness, G. W. Biedermann, "Dual-axis, high data-rate atom interferometer via ensemble exchange," *In Preparation*.
[2] D. L. Butts, J. M. Kinast, B. P. Timmons, and R. E. Stoner, J. Opt. Soc. Am. B 28, 416 (2011)
[3] H. J. McGuinness, A. V. Rakholia, and G. W. Biedermann, Appl. Phys. Lett. 100, 011106 (2012).

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