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Continuous Rotation and Acceleration Sensing in a Dual Atom Interferometer FRANK NARDUCCI, MARY LOCKE, RAGHAV SIMHA, JON DAVIS, AARON MELDRUM, Naval Air Systems Command, Patuxent River, MD, GEORGE WELCH, Texas A&M University, College Station, TX, NAVAL AIR SYSTEMS COMMAND, PATUXENT RIVER, MD TEAM, TEXAS A&M UNIVERSITY, COLLEGE STATION, TX COLLABORATION — The theoretical model and progress of achieving pure acceleration and rotation measurements using atom interferometry is presented. We source our interferometer with a high flux (10^8 1/s) atom beam derived from a 2D MOT without the use of co-propagating optical beams. With the aim of circumventing complications and measurement discontinuities arising from pulsed Raman fields, we utilize continuous Raman fields with the transverse velocity of the atom beam determining our $\pi/2$-π-$\pi/2$ "pulse" condition. Along with the sensitivity benefits of matter wave interferometry as compared to optical interferometry, the continuous nature of our apparatus makes it beneficial for inertial navigation.

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