Abstract Submitted for the DAMOP19 Meeting of The American Physical Society

Synchronous Spin-Exchange Optically Pumped NMR Gyro<sup>1</sup> DANIEL THRASHER, SUSAN SORENSEN, MICHAEL BULATOWICZ, THAD WALKER, University of Wisconsin - Madison — We present progress toward a dual-species synchronous spin-exchange optically pumped NMR gyro and discuss the leading systematic errors. Xe131 and Xe129 are simultaneously polarized transverse to a pulsed bias magnetic field through spin exchange collisions with polarized Rb atoms. We further discuss driving the Xe precession by modulating the repetition rate of the bias field pulses as an alternative to optical pumping modulation. This allows for large modulation depths while maintaining the fidelity of the embedded Rb magnetometer.

<sup>1</sup>Research supported by the NSF and Northrop-Grumman Corp.

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Date submitted: 31 Jan 2019

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