

Abstract Submitted
for the DAMOP16 Meeting of
The American Physical Society

Coherent manipulation of an ensemble of nuclear spins in diamond for high precision rotation sensing JEAN-CHRISTOPHE JASKULA, KASTURI SAHA, ASHOK AJOY, PAOLA CAPPELLARO, MIT — Gyroscopes find wide applications in everyday life from navigation and inertial sensing to rotation sensors in hand-held devices and automobiles. Current devices, based on either atomic or solid-state systems, impose a choice between long-time stability and high sensitivity in a miniaturized system. We are building a solid-state spin gyroscope associated with the Nitrogen-Vacancy (NV) centers in diamond take advantage of the efficient optical initialization and measurement offered by the NV electronic spin and the stability and long coherence time of the nuclear spin, which is preserved even at high defect density. In addition, we also investigate electro-magnetic noise monitoring and feedback schemes based on the coupling between the NV electronic and nuclear spin to achieve higher stability.

Jean-Christophe Jaskula
Harvard-Smithsonian CFA

Date submitted: 29 Jan 2016

Electronic form version 1.4