

Abstract Submitted  
for the DAMOP11 Meeting of  
The American Physical Society

**Towards room temperature magnetic sensing of a single electron spin in biological systems** NICHOLAS CHISHOLM, PETER MAURER<sup>1</sup>, GEORG KUCSKO<sup>2</sup>, PEGGY LO<sup>3</sup>, NORMAN YAO, BRENDAN SHIELDS, HONGKUN PARK, MIKHAIL LUKIN, Harvard University — We report on recent progress of room temperature sensing for biological applications using nitrogen-vacancy (NV) centers in diamond. First, we discuss progress made toward measuring the magnetic field of a single electron spin using as a sensor the electron spin of an NV in bulk diamond. This is approached by attaching commercially available nitroxide spin labels to the functionalized surface of the bulk diamond, and using a nearby NV center as a sensor. In addition, we present progress toward the study of functionalized nanodiamonds in living cells used as single spin label probes of local magnetic field environments. The ability to sense magnetic fields with sub-micrometer resolution with sensitivity capable of detecting a single electron spin is of major importance to the biological sciences.

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Date submitted: 04 Feb 2011

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