

Abstract Submitted
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Towards single electron spin detection at room temperature using nitrogen-vacancy centers NICHOLAS CHISHOLM, IGOR LOVCHINSKY, ALEX SUSHKOV, MINAKO KUBO, PEGGY LO, ERIC BERSIN, Harvard University, DAVID HUNGER, Ludwig-Maximilians-Universitat Munchen, ALEXEY AKIMOV, STEVEN BENNETT, NORMAN YAO, HONGKUN PARK, MIKHAIL LUKIN, Harvard University — We present recent progress on single electron spin detection at room temperature using nitrogen-vacancy (NV) centers in diamond. Sensing a small number of electron spins outside of the measurement substrate at room temperature remains an outstanding goal and would enable many applications, including detection of magnetic resonance signals from biological molecules, determination of free radical concentrations in living cells and real-time monitoring of action potentials in neurons. By monitoring the population relaxation rate of an NV center we demonstrate detection of gadolinium spins located outside the diamond lattice.

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