Abstract Submitted for the DAMOP16 Meeting of The American Physical Society

Nanoscale NMR and NQR with Nitrogen Vacancy Centers ELANA URBACH, IGOR LOVCHINSKY, JAVIER SANCHEZ-YAMAGISHI, SOONWON CHOI, ALEXEI BYLINSKII, BO DWYER, TROND ANDERSEN, ALEX SUSHKOV, HONGKUN PARK, MIKHAIL LUKIN, Harvard University — Nuclear quadrupole resonance (NQR) is a powerful tool which is used to detect quadrupolar interaction in nuclear spins with I ¿ 1/2. Conventional NQR and NMR technology, however, rely on measuring magnetic fields from a macroscopic number of spins. Extending NMR and NQR techniques to the nanoscale could allow us to learn structural information about interesting materials and biomolecules. We present recent progress on using Nitrogen-Vacancy (NV) centers in diamond to perform room temperature nanoscale NMR and NQR spectroscopy on small numbers of nuclear spins in hexagonal boron nitride.

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Date submitted: 28 Jan 2016 Electronic form version 1.4