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NMR spectroscopy using quantum defects in diamond NITHYA ARUNKUMAR, CONNOR HART, Harvard University, DOMINIK BUCHER, The Technical University of Munich, KEVIN OLSSON, University of Maryland, JOHANNES CREMER, DAVID GLENN, OREN BEN DOR, Harvard University, RONALD WALSWORTH, University of Maryland — NMR sensors based on nitrogen-vacancy (NV) centers can optically detect magnetic signals from sample volumes several orders of magnitude smaller than the most sensitive inductive detectors. Hence an NV-NMR spectrometer is a promising tool for next-generation analytic technologies, such as single-cell analysis and metabolomics. However, the performance of an ensemble NV-NMR spectrometer is limited by the magnetic field sensitivity of the device. We present a readout technique to perform high-resolution micron-scale NV-NMR spectroscopy with enhanced sensitivity. We also investigate the effect of the bias magnetic field and laser power on this measurement technique.

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