

Abstract Submitted
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Scanning magnetometry of nanomagnets via a nitrogen-vacancy center in diamond scanning microscope MICHAEL GRINOLDS, PATRICK MALETINSKY, SUNGKUN HONG, MIKHAIL LUKIN, RONALD WALSWORTH, AMIR YACOBY, Harvard University — Recently, nitrogen-vacancy (NV) centers in diamond have shown to be an attractive system for performing sensitive magnetic measurements on the nanoscale under ambient conditions [1,2]. Here, we demonstrate magnetic imaging of nanoscale structures using a trapped NV center in an atomic force microscope (AFM). By fixing an NV center within tens of nanometers from the end of our AFM tips, we are able to spatially map magnetic fields from nanomagnets. Due to our achieved NV-sample distance, we are able to detect smaller magnetic sources than previously demonstrated [2] consisting of ensembles of thousands of electron spins. Progress towards the mapping the dipole field of a single-electron spin is additionally presented.

[1] J. Maze *et al.* *Nature* 455, 644 (2008)

[2] G. Balasubramanian *et al.* *Nature* 455, 648 (2008)

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