

Abstract Submitted
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Coupling of a Single Nitrogen-Vacancy Center to Nitrogen Spins in Diamond¹ RYAN J. EPSTEIN, DAVID D. AWSCHALOM, Center for Spintronics and Quantum Computation, University of California, Santa Barbara, CA 93106 — Confocal microscopy with photon-correlation detection is employed to optically probe single Nitrogen-Vacancy color centers in diamond at room temperature. Photon anti-bunching is measured to distinguish one center from multiple centers within the laser focus. Polarization-dependent excitation in conjunction with magnetophotoluminescence enables the orientation of an N-V center's symmetry axis to be discerned. For a single center with symmetry axis parallel to the magnetic field, a dip in the photoluminescence intensity is observed when the ground-state spin sublevels anti-cross at 0.1 T. We find an additional dip at 0.05 T that is attributed to resonant dipolar coupling to nearby substitutional Nitrogen spins.

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