

Abstract Submitted
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Hyperfine-mediated gate-driven electron spin resonance¹ EDWARD LAIRD², CHRISTIAN BARTHEL³, EMMANUEL RASHBA, CHARLES MARCUS, Department of Physics, Harvard University, MICAH HANSON, ART GOSSARD, Materials Department, University of California at Santa Barbara — An all-electrical spin resonance effect in a GaAs few-electron double quantum dot is investigated experimentally and theoretically. The magnetic field dependence and absence of associated Rabi oscillations are consistent with a novel hyperfine mechanism. The resonant frequency is sensitive to the instantaneous hyperfine effective field, and the effect can be used to detect and create sizable nuclear polarizations. A device incorporating a micromagnet exhibits a magnetic field difference between dots, allowing electrons in either dot to be addressed selectively.

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