

Abstract Submitted
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Neutral donors interacting with a two-dimensional electron gas measured by electrically detected magnetic resonance up to 94GHz C.C. LO, J. BOKOR, University of California, Berkeley, V. LANG, R.E. GEORGE, J.J.L. MORTON, University of Oxford, A.M. TYRYSHKIN, S.A. LYON, Princeton University, T. SCHENKEL, Lawrence Berkeley National Laboratory — Electrically detected magnetic resonance of a silicon field-effect transistor with channel-implanted donors is measured in a W-band (94 GHz, 3.36 T) resonant microwave cavity. It is found that the two-dimensional electron gas (2DEG) resonance signal intensity increases by two orders of magnitude compared with conventional low-field X-band (9.7 GHz, 0.35 T) measurements. On the other hand, the neutral donor resonance signals increase by over one order of magnitude. We interpret the results in terms of direct spin-dependent scattering and a polarization transfer from the donors to the 2DEG spin system.

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