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**Electrically-detected magnetic resonance in accumulation-layer MOSFETs** LAURENS WILLEMS VAN BEVEREN, University of New South Wales, DANE MCCAMEY, University of Utah, HANS HUEBL, Technische Universität München, ANDREW FERGUSON, University of Cambridge, TIM DUTY, ROBERT CLARK, University of New South Wales — Spin-dependent transport, originating from neutral-impurity scattering, in silicon accumulation-layer MOSFETs was reported more than a decade ago in an electron-spin resonance (ESR) cavity setup [1]. There, current measurements on the MOSFET showed ESR features with a hyperfine (HF) splitting of 42 G, indicative of electrons whose wavefunctions overlap with phosphorous nuclei in the silicon crystal. Here, we report the observation of electrically-detected magnetic resonance (EDMR) in phosphorous-doped silicon MOSFETs without the constraint of a cavity and down to the mK-regime in a dilution refrigerator with a superconducting magnet. Instead, the ESR-field is generated by an on-chip shorted coplanar stripline (CPS), allowing broadband operation. Continuous-wave EDMR was achieved up to 30 GHz. The EDMR spectra show (i) the two hyperfine-split (42 G) ESR lines and (ii) an EDMR signal that is centered between the hyperfine lines, associated with the 'free electron' ESR response. [1] R. Ghosh and W. Silsbee, Phys. Lett. 85, 439 (1992).

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