

Abstract Submitted  
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**Fabrication of dual-gated devices on undoped Si/SiGe heterostructures**<sup>1</sup> Y. DOVZHENKO, K. WANG, C. PAYETTE, Department of Physics, Princeton University, Princeton, New Jersey 08544, C.-H. LEE, C. W. LIU, Department of Electrical Engineering, National Taiwan University, Taipei, Taiwan, ROC, J. R. PETTA, Department of Physics, Princeton University, Princeton, New Jersey 08544 — Undoped accumulation mode Si/SiGe heterostructures have recently emerged as a promising platform for the fabrication of few-electron silicon spin qubits. Spin blockade has been observed in an accumulation mode double dot [1] and a record mobility of 1.6 million  $\text{cm}^2/(\text{Vs})$  has been achieved in undoped wafers grown at National Taiwan University [2]. We develop a fabrication process for dual-gated accumulation mode structures and form a stable two-dimensional electron gas by applying positive bias to a global top gate. The resulting 2DEG has charge densities of  $2 - 5 \times 10^{11}/\text{cm}^2$  and mobilities up to 200,000  $\text{cm}^2/(\text{Vs})$ . We present preliminary data from quantum point contacts fabricated in this geometry.

References:

[1] M. G. Borselli *et al.*, Appl. Phys. Lett. **99**, 063109 (2011).

[2] T. M. Lu *et al.*, Appl. Phys. Lett. **94**, 182102 (2009).

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