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Single charge sensing and transport in double quantum dots fabricated from commercially grown Si/SiGe heterostructures¹ K. WANG, C. PAYETTE, Y. DOVZHENKO, P. KOPPINEN, J.R. PETTA, Princeton University — We perform quantum Hall measurements on three types of commercially available modulation doped Si/SiGe heterostructures [1] to determine their suitability for depletion gate defined quantum dot devices. By adjusting the growth parameters, we are able to achieve two dimensional electron gases with low charge densities and high mobilities. We extract an electron temperature of 100 mK in the single quantum dot regime. Double quantum dots fabricated on these heterostructures show clear evidence of single charge transitions [2] as measured in dc transport and charge sensing.

[1] C. B. Simmons et al, Phys. Rev. Lett. 106, 156804 (2011).

[2] R. Hanson et al, Rev. Mod. Phys. 79, 1217 (2007).

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