

Abstract Submitted  
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**Transport through an impurity tunnel coupled to a Si/SiGe quantum dot** RYAN H. FOOTE, DANIEL R. WARD, University of Wisconsin-Madison, J.R. PRANCE, Lancaster University, JOHN KING GAMBLE, ERIK NIELSEN, Sandia National Laboratories, BRANDUR THORGRIMSSON, D.E. SAVAGE, University of Wisconsin-Madison, A.L. SARAIVA, Universidade Federal do Rio de Janeiro, MARK FRIESEN, S.N. COPPERSMITH, M.A. ERIKSSON, University of Wisconsin-Madison — Here we present measurements of transport through a gate-defined quantum dot formed in a Si/SiGe heterostructure, demonstrating controllable tunnel coupling between the quantum dot and a localized electronic state.<sup>1</sup> Combining experimental stability diagram measurements with 3D capacitive modeling based on the expected electron density profiles, we determine the most likely location of the localized state in the quantum well. This work is supported in part by NSF (DMR-1206915, IIA-1132804), ARO (W911NF-12-1-0607) and the William F. Vilas Estate Trust. Development and maintenance of the growth facilities used for fabricating samples supported by DOE (DE-FG02-03ER46028). This research utilized facilities supported by the NSF (DMR-0832760, DMR-1121288). The work of J.K.G. and E.N. was supported in part by the Laboratory Directed Research and Development program at Sandia National Laboratories. Sandia National Laboratories is a multi-program laboratory managed and operated by Sandia Corporation, a wholly owned subsidiary of Lockheed Martin Corporation, for the U.S. Department of Energy's National Nuclear Security Administration under contract DE-AC04-94AL85000.

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Ryan Foote  
Univ of Wisconsin, Madison

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