Abstract Submitted
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Structural characterization and magnetotransport in Ge/Si quantum dots[1] DONGYUE YANG, Department of Physics and Astronomy, University of Pittsburgh, CHRIS PETZ, JERROLD FLORO, Department of Materials Science and Engineering, University of Virginia, JEREMY LEVY, Department of Physics and Astronomy, University of Pittsburgh — Artificially ordered quantum dot (QD) arrays may create unique functionalities such as cluster qubits and spintronic bandgap systems.[2] We fabricate directed self-assembled Ge/SiC/Si arrays with fine control over QD size and spatial arrangement on the sub-35 nm length scale for this purpose. The formation, thermal stability, and structure of the QDs are studied extensively with transmission electron microscopy (TEM) and atomic force microscopy (AFM).[3] Magnetotransport measurements through the QD arrays shows a diamagnetic shift that depends on the dots' spatial configuration. We attribute this configuration dependence to the interaction of the electrons between different QDs.

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[2]C. E. Pryor, M. E. Flatte, and J. Levy, Applied Physics Letters **95**, 232103 (2009)
[3]C. Petz, D. Yang, J. Levy and J. Floro, Journal of Material Research (JMR-2012-0430)

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