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Tuning the magnetic interaction between Mn dopants in GaAs DAVID GOHLKE, JAY GUPTA, Ohio State University, Department of Physics — Manganese can be used as a dopant in gallium arsenide to create a ferromagnetic semiconductor. We use low-temperature scanning tunneling microscopy to study these magnetic properties. The magnetic coupling between Mn dopants in GaAs(110) changes between ferromagnetic and antiferromagnetic depending on the orientation of the acceptors due to the zincblende crystal structure of the surface [Kitchen et al, Nature, 2006]. We have recently reported tuning of the resonance energy for a single Mn acceptor by moving charged atomic point defects [Lee and Gupta, Science, 2010]. Here, we tune the magnetic interaction between surface-layer Mn atoms in the same way. Funding for this research was provided by the Center for Emergent Materials at the Ohio State University, an NSF MRSEC (Award Number DMR-0820414). http://www.physics.ohio-state.edu/∼jgupta/

David Gohlke
Ohio State University, Department of Physics

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