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STM studies of spin excitations in few-atom cobalt clusters DAVID GOHLKE, TAEYOUNG CHOI, JAY GUPTA, Department of Physics, The Ohio State University — The understanding of spin interaction between atoms is essential to the production of nanoscale magnetic materials. We use low-temperature (5 K) scanning tunneling microscopy and spectroscopy to study the magnetic properties of few-atom cobalt clusters. The clusters are built with atomic manipulation on one-monolayer thick copper nitride (Cu_2N) islands, which serve to decouple the clusters from the underlying Cu(100) or Cu(111) substrate. Inelastic electron tunneling spectroscopy reveals a variety of spin-flip excitations at low energies ($<$ 20meV). These transitions are visible due to the mediation of the insulating Cu_2N layer, and spatially vary along dimers and larger multimers. In particular, we examine the effects of the anisotropic copper nitride lattice on the spin-coupling between the constituent cobalt atoms. http://www.physics.ohio-state.edu/~jgupta/

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