

O 20: Invited Talk Hirjibehedin (FV: MA+O)

Time: Tuesday 9:30–10:15

Location: H36

Invited Talk

O 20.1 Tue 9:30 H36

Spin-Coupling in Engineered Atomic Structures — ●CYRUS HIRJIBEHEDIN, CHRISTOPHER LUTZ, and ANDREAS HEINRICH — IBM Research Division, Almaden Research Center, San Jose, CA 95120 USA

Magnetic nanostructures are increasing data storage capacities and are promising candidates for implementations of novel spin-based computation techniques. The relative simplicity and reduced dimensionality of nanoscale magnetic structures also make them attractive model sys-

tems for studying the interactions between small numbers of quantum spins. Using a high-field low-temperature scanning tunneling microscope, we assemble linear chains of Mn atoms one atom at a time on thin, insulating layers of copper nitride. We probe the excitation spectra of the individual magnetically-coupled chains with inelastic electron tunneling spectroscopy and observe excitations of the coupled atomic spins that can change both the total spin and its orientation. Comparison with a model spin-interaction Hamiltonian yielded the collective spin configuration and the strength of the coupling between the atomic spins.