

Spin Excitation Spectroscopy

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April 22nd at 4.30pm in P106 Pearson (Chem. Dept.)

We have extended the abilities of the scanning tunneling microscope to include the measurement of spin-excitation spectra of individual atoms and assemblies of magnetic atoms on surfaces. Utilizing spin-excitation spectroscopy as our primary tool, we are now capable of extracting exchange coupling energies, anisotropy energies, and information on the spin configuration of nanometer-scale structures. What we learn from these experiments will hopefully allow us to engineer the “energy landscape” of a system of spins in order to achieve nanometer-scale binary logic circuits that operate using only the spin degree of freedom.

