



Physics Colloquium and CAP Lecture Series

Note special day, time, and location:
Thursday, March 10, 2011, 5:15 pm, PS 1072

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Controlling Quantum States using Earthquakes

The high quality of nanostructured materials enables the routine fabrication of systems in which the dynamics are particles is governed by quantum mechanics. Not only can a great deal of physics be probed in a robust solid state environment, but the possibility of using these materials for quantum information processing has sparked a great deal of research worldwide. One caveat of such systems is that once they are fabricated, the system itself becomes a static structure that cannot be changed. To make a dynamic structure, nano-earthquakes in the form of surface acoustic waves (SAWs) can be applied resulting in time-varying fields to control the motion and dynamics of particles in quantum structures. In particular, I will discuss how SAWs can control and enhance the coherence of electron spins in semiconductor systems as well as how SAWs can control the emission of single photons from quantum dot structures.