AMO/Condensed Matter Faculty Candidate Special Seminar

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Date: Thursday, March 19, 2015
Time: 10:30 A.M.
Location: Physics room 242

Controlling the dynamics of single and coupled quantum systems

The pursuit and development of revolutionary technologies based on the unique aspects of quantum mechanics (superposition, entanglement) is a rapidly growing endeavor that spans the fields of quantum communication, computing, simulation, and sensing. To come to fruition, these efforts require an extraordinary degree of control over the dynamics of quantum systems. The primary challenge in achieving this is the fragile nature of quantum states, a difficulty which is already significant for a single quantum system and which quickly grows as individual quantum systems are coupled together to build more complex, larger-scale devices. I will give an introduction to the field and present our own progress towards overcoming these challenges in a number of solid state platforms, including semiconductor quantum dots, superconducting-circuit based quantum bits, and defect centers in solids. In addition to the potential technological implications, I will highlight some of the rich and interesting physics that emerges in these systems.

Refreshments at 10:15 A.M.