

Condensed Matter Theory Center Seminar



Thursday, May 5
11:00 am – 12:30 pm
2205 Toll Physics Building

Ana Maria Rey

JILA, NIST and University of Colorado

“New Perspectives on Quantum Simulation with Alkaline-Earth Atoms”

Abstract: Understanding the behavior of interacting electrons in solids or liquids is at the heart of modern quantum science and necessary for technological advances. However, the complexity of their interactions generally prevents us from coming up with an exact mathematical description of their behavior. Precisely engineered ultracold gases are emerging as a powerful tool for unraveling these challenging physical problems. In this talk, I will present recent ideas on using alkaline-earth atoms (AEAs) --currently the basis of the most precise atomic clock in the world-- for the investigation of complex many-body phenomena and magnetism. I will discuss ideas to use AEAs dressed by laser fields to engineer analogs of spin-orbit coupled Hamiltonians which can display topologically quantized particle transport. I will also discuss how Weyl quasiparticles can naturally emerge when AEAs populate electronic excited states.

Host: Will Cole

Web: <http://www.physics.umd.edu/cmtc/seminars.html>

