

Condensed Matter Theory Center Seminar



Tuesday, March 26
11:00 am – 12:30 pm, Physics Building 2205

Kaden Hazzard

University of Colorado at Boulder, JILA, and NIST

“Quantum magnetism in ongoing ultracold molecule and ion experiments”

I will discuss our theoretical results on strongly correlated quantum magnetism in ultracold systems, especially far-from-equilibrium. I will discuss our collaboration with Penning trap ion and ultracold molecule experiments at JILA and NIST-Boulder. These systems' capacities for simulating strongly correlated quantum magnetism have exploded in the last couple years. Ion experiments can now coherently work with 100's of ions, while control ~ 15 ions has reached exquisite levels. For molecules, sufficient coherence of the rotational states, which are used to mimic spin-1/2's, has been experimentally demonstrated. I will describe how far-from-equilibrium dynamics in these experiments is revealing signatures of quantum magnetism and the theoretical methods we have developed to describe them. I also will explain interesting aspects of the dynamics: creating metrologically useful entangled states is just one example.

(All are welcome to attend)

