

# Exploring a Quantum Degenerate Fermi gas

Deborah S. Jin

*JILA, Boulder, USA*

I will discuss production and study of a quantum degenerate Fermi gas of atoms. The fundamental difficulty in cooling a gas of fermionic atoms is the lack of rethermalizing collisions in a spin-polarized sample. We overcome this difficulty using simultaneous forced evaporation of a two spin-state cloud of potassium-40 atoms held in a magnetic trap. In the quantum degenerate regime we explore the effects of the Fermi statistics on the thermodynamics of the ultracold gas. Initial studies of the dynamics of the two component Fermi gas will also be discussed.