Abstract Submitted
for the MAR10 Meeting of
The American Physical Society

**Observing quantum criticality in cold atoms** KADEN HAZZARD, ERICH MUELLER, Cornell University — At finite temperature, near a quantum critical point, thermodynamic response functions obey scaling relations. These scaling relations hold even in the absence of well defined quasiparticles. Although this structure is hidden in current visualizations of the data, I discuss how this structure can be probed in a cold gas experiment. I calculate the role of finite size effects, showing that a trapped gas can give information about bulk quantum criticality. I consider readily accessible systems, such as bosons in an optical lattice, and discuss both static observables (such as trap profiles) as well as finite-frequency probes such as RF spectroscopy.

Kaden Hazzard
Cornell University

Date submitted: 20 Nov 2009 Electronic form version 1.4