

Abstract for an Invited Paper  
for the MAR09 Meeting of  
The American Physical Society

### **Theory of RF Spectroscopy in the Normal And Superfluid Phases of Ultracold Fermi Gases**

KATHRYN LEVIN<sup>1</sup>, University of Chicago

In this talk we present an overview of radio frequency (RF) spectroscopy in the atomic Fermi superfluids, addressing both momentum integrated and momentum resolved experiments. A general purpose of these RF experiments is to extract the pairing gap size and we present several methodologies for accomplishing this. In addition, we discuss the effects of traps, population imbalance, and final state interactions over the entire range of temperatures. By comparing theory and experiment, we show how a broad range of experimental phenomena can be accommodated within the BCS-Leggett description of BCS-BEC crossover. We also briefly touch on commonalities between photoemission in the cuprate superconductors and RF spectroscopy in the ultracold gases.

<sup>1</sup>Co-authors: Qijin Chen, Yan He and Chih-Chun Chien