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

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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.

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