

Abstract Submitted
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Radio-Frequency Spectroscopy of strongly interacting Fermi gases¹ ANDRE SCHIROTZEK, CHENG-HSUN WU, ARIEL SOMMER, MARTIN ZWIERLEIN, MIT — Strongly interacting Fermi gases exhibit a rich phase diagram in the BEC-BCS crossover. In recent experiments we have used radio frequency spectroscopy to probe two physically very different regimes: 1.) We have observed Spin-Polarons in a highly imbalanced Fermi mixture. A single spin down atom immersed in a spin up Fermi sea dresses itself with a cloud of majority atoms, thus forming a Spin-Polaron. rf spectroscopy can directly reveal the polaron and allows for an experimental measure of the quasiparticle residue Z and the chemical potential μ of this Fermi liquid. At a critical interaction strength, the transition to two-particle molecular binding is observed. 2.) rf spectroscopy of quasiparticles in a polarized superfluid allowed us to determine the superfluid gap Δ and has demonstrated the importance of the Hartree energy U in rf spectra [1]. [1] Andre Schirotzek, Yong-il Shin, Christian H. Schunck and Wolfgang Ketterle, Phys. Rev. Lett. 101, 140403 (2008)

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