

Abstract Submitted
for the DAMOP14 Meeting of
The American Physical Society

Local Measurements of Ultracold Fermions in an Optical Lattice Geometry LUKE MILLER, EUGENIO COCCHI, University of Cambridge & Universität Bonn, JAN DREWES, FERDINAND BRENNECKE, Universität Bonn, MARCO KOSCHORRECK, DANIEL PERTOT, MICHAEL KÖHL, University of Cambridge & Universität Bonn — Experimental realisations of quantum gases of interacting fermionic atoms confined to reduced dimensionalities, arising from the use of optical lattices, constitute a system which can be employed to investigate a range of phenomena traditionally observed in condensed matter physics, from the low-temperature spin-ordered phases of Hubbard-type models to the physics of the Luttinger liquid model. I will report on our recent experimental efforts to study the physics of such systems by loading a quantum degenerate two-component Fermi gas of ^{40}K atoms into an optical lattice geometry. By exploiting high-resolution imaging combined with radio-frequency and Raman spectroscopy, we are able to go beyond the standard of global measurement and perform spatially-resolved measurements of the in-situ atom distributions, directly elucidating the local behaviour of the emergent phenomena.

Luke Miller
University of Cambridge & Universität Bonn

Date submitted: 30 Jan 2014

Electronic form version 1.4