

Abstract Submitted
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Probing the Contact Locally in a Trapped Unitary Fermi Gas RABIN PAUDEL, YOAV SAGI, TARA DRAKE, DEBORAH JIN, JILA, NIST and the University of Colorado, and the Department of Physics, University of Colorado, Boulder — The inherent density inhomogeneity of a trapped gas can complicate interpretation of experiments and can wash out sharp features. This is especially important for a Fermi gas, where interaction effects as well as the local Fermi energy, or Fermi momentum, depend on the density. We report on experiments that use optical pumping with shaped light beams to spatially select the center part of a trapped gas for probing. This technique is compatible with momentum resolved measurements. For a weakly interacting Fermi gas of ^{40}K atoms, we present measurements of the momentum distribution that reveal for the first time a sharp Fermi surface. We then apply this technique to a strongly interacting Fermi gas at the Feshbach resonance, where we measured the temperature dependence of the Tan's contact locally in the trapped gas.

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