

Abstract Submitted  
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**The contact of a homogeneous unitary Fermi gas** BISWAROOP MUKHERJEE, PARTH PATEL, ZHENJIE YAN, RICHARD FLETCHER, JULIAN STRUCK, MARTIN ZWIERLEIN, Massachusetts Inst of Tech-MIT — The contact is a fundamental quantity that measures the strength of short-range correlations in quantum gases. As one of its most important implications, it provides a link between the microscopic two-particle correlation function at small distance and the macroscopic thermodynamic properties of the gas. In particular, pairing and superfluidity in a unitary Fermi gas can be expected to leave its mark in behavior of the contact. Here we present measurements on the temperature dependence of the contact of a unitary Fermi gas across the superfluid transition. By trapping ultracold  $^6\text{Li}$  atoms in a potential that is homogeneous in two directions and harmonic in the third<sup>1</sup>, we obtain radiofrequency spectra of the homogeneous gas at a high signal-to-noise ratio. We compare our data to existing, but often mutually excluding theoretical calculations for the strongly interacting Fermi gas.

<sup>1</sup>Mukherjee et. al. arXiv:1610.10100 (2016)

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