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Measurement of the Homogenous Contact in a Strongly Interacting Fermi Gas TARA DRAKE, YOAV SAGI, RABIN PAUDEL, Univ of Colorado - Boulder, DEBORAH JIN, Univ of Colorado - Boulder, NIST — The contact, proposed originally by Shina Tan, is a thermodynamic parameter that has been shown, both theoretically and experimentally, to connect to a large number of measurable properties of a Fermi gas. For a strongly interacting Fermi gas in the BCS-BEC crossover, a measurement of the temperature-dependence of the contact in the vicinity of the superfluid transition has the potential to distinguish among different theories of this system. However, as with any quantity that depends on density, averaging over a trapped gas can wash out essential features. We perform measurements of the homogeneous gas contact as a function of temperature by employing a technique to probe only the center of a trapped gas of potassium-40 atoms. We compare our results to theories of strongly interacting Fermi gases.

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