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Thermodynamics of a Strongly-Interacting Fermi Gas JOSEPH KINAST, ANDREY TURLAPOV, JOHN THOMAS, Dept. of Physics, Duke University — The study of Fermi gases near a Feshbach resonance provides a convenient proving ground for theories of strongly-interacting exotic systems ranging from nuclear matter to high temperature superconductors. Here, we report on the measurement of basic thermodynamic quantities in a strongly-interacting Fermi gas from the highly degenerate regime to the classical limit. An equal mixture of two spin states of ^{6}Li is evaporatively cooled well into the degenerate regime in a stable optical trap. We measure the volume of the gas versus energy and its heat capacity, using novel energy input and thermometry techniques. We find very good quantitative agreement between our measurements and a recent pseudogap theory.

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