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Compressibility of a Repulsive Fermi Gas of ^6Li MYOUNG-SUN HEO, YERYOUNG LEE, TOUT T. WANG, TIMUR M. RVACHOV, WOLFGANG KETTERLE, DAVID E. PRITCHARD, MIT — We studied the equilibrium properties of a two-component repulsive Fermi gas of ^6Li by measuring the compressibility at various interaction strengths near a Feshbach resonance at 834G. The compressibility was extracted from in-trap atomic density profiles, and agrees with first order perturbation theory. Our experiment uses phase-contrast imaging to probe atomic clouds with large optical density, requiring compensation of dispersive effects. The feasibility window for such experiments is limited by decay to a near-resonant molecular bound state, and we explore the limits of this window by measuring decay rates at various interaction strengths.

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