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Observation of the pairing gap in a strongly interacting Fermi gas

RUDOLF GRIMM, Inst. of Exp. Physics, Univ. Innsbruck, and IQOQI, Austrian Acad. of Sciences, Innsbruck

We study fermionic pairing in an ultracold two-component gas of lithium-6 atoms by observing an energy gap in the radio-frequency excitation spectra. With control of the two-body interactions through a Feshbach resonance, we demonstrate the dependence of the pairing gap on coupling strength, temperature, and Fermi energy. The appearance of an energy gap with moderate evaporative cooling suggests that our full evaporation brings the strongly interacting system deep into a superfluid state.