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Using photoemission spectroscopy to probe a strongly interacting Fermi gas[1] JOHN STEWART, JOHN GAEBLER, DEBORAH JIN, JILA-University of Colorado — We use photoemission spectroscopy to directly probe the elementary excitations and energy dispersion of a strongly interacting Fermi gas of atoms. In these photoemission experiments, an rf photon ejects an atom from our strongly interacting system via a spin-flip transition to a weakly interacting state. This new measurement technique for ultracold atom gases, like photoemission spectroscopy for electronic materials, directly probes low energy excitations and thus can reveal excitation gaps and/or pseudogaps. We observe a back-bending of the excitation spectrum consistent with a BCS-like dispersion curve.

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