

Abstract for an Invited Paper  
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**Photoemission Spectroscopy for Ultracold Atoms<sup>1</sup>**

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We perform momentum-resolved rf spectroscopy on a Fermi gas of potassium-40 atoms in the region of the BCS-BEC crossover. This measurement is analogous to photoemission spectroscopy, which has proven to be a powerful probe of excitation gaps in superconductors. We measure the single-particle spectral function, which is a fundamental property of a strongly interacting system and is directly predicted by many-body theories. For a strongly interacting Fermi gas near the transition temperature for the superfluid state, we find evidence for a large pairing gap.

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