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Probing the Spectral Function Using Momentum Resolved Radio Frequency Spectroscopy in Trapped Fermi Gases¹

QIJIN CHEN, Zhejiang University, KATHY LEVIN, University of Chicago — A measurement of the centrally important spectral function has not been possible in ultracold Fermi gases until recent momentum resolved radio frequency (RF) spectroscopy experiments in ⁴⁰K. These new experiments can be exploited to test many-body theories underlying general quantum simulations performed on Fermi gases. Here we establish the underlying physics of these RF measurements. We show that, by providing a clear dispersion signature of pairing, they remove ambiguity plaguing the interpretation of previous RF studies. Our calculated spectral intensities are in semi-quantitative agreement with the data.

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