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Nonequilibrium Tunneling Spectroscopy of Carbon Nanotubes[1]
NICHOLAS BRONN, NADYA MASON, University of Illinois at Urbana-Champaign, Department of Physics and Materials Research Laboratory — We have used nonequilibrium tunneling spectroscopy to elucidate the nature of electron-electron interactions in carbon nanotubes. Due to their reduced dimensionality, carbon nanotubes are thought to be described by Luttinger liquid theory, where electron-electron interactions play a considerable role. Superconducting tunnel probes are used to measure the electron energy distribution functions, whose shape can be related to electronic energy relaxation and scattering. We measure the dependence of the electron distribution function on nonequilibrium bias, position along the nanotube, and temperature.

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