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Superconducting Tunneling Spectroscopy of a Carbon Nanotube Quantum Dot[1] TRAVIS DIRKS, YUNG-FU CHEN , NADYA MASON, Department of Physics and Materials Research Laboratory, University of Illinois , NORMAN BIRGE, Department of Physics and Astronomy, Michigan State University — We report results on tunneling spectroscopy of a carbon nanotube quantum dot. Using a three-probe technique that includes a superconducting tunnel probe, we map out changes in conductance due to band structure, excited states, and applied bias. We also see features due to the unique nature of the superconducting probe, including enhancement of weak tunneling processes. In addition, we see conduction inside the superconducting gap when an end to end bias is applied, which suggests some inelastic, possibly assisted, tunneling process inside the quantum dot.

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