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Terahertz Bolometric Detection in an Individual Single-Walled Carbon Nanotube[1] JOEL CHUDOW, DANIEL SANTAVICCA, ANTHONY ANNUNZIATA, LUIGI FRUNZIO, DANIEL PROBER, Dept. of Applied Physics, Yale University, CHARLES SCHMUTTENMAER, Dept. of Chemistry, Yale University, PHILIP KIM, Depts. of Physics and Applied Physics, Columbia University — We describe measurements of terahertz detection in individual single-walled carbon nanotubes. The terahertz power dissipated in the antenna-coupled nanotube is determined from the induced temperature change via the nanotube's temperature-dependent resistance. This is the first demonstration of terahertz bolometric detection in an individual nanotube. This experimental technique is being developed to study high-frequency charge excitations in the nanotube, which are predicted to display Luttinger-liquid behavior due to the lack of screening in one dimension.

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