

Abstract Submitted
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Carbon nanotube quantum dots as highly sensitive THz spectrometers¹ MOHAMED RINZAN, Physics department, Georgetown university, GREG JENKINS, DENNIS DREW, Physics department, University of Maryland, SERHII SHAFRANJUK, Department of physics and astronomy, Northwestern university, PAOLA BARBARA, Physics department, Georgetown university — We show that carbon nanotube quantum dots (CNT-Dots) coupled to antennas are extremely sensitive, broad-band, terahertz quantum detectors. Their response is due to photon-assisted single-electron tunneling (PASET)[1], but cannot be fully understood with orthodox PASET models[2]. We consider intra-dot excitations and non-equilibrium cooling to explain the anomalous response. REFERENCES: [1] Y. Kawano, S. Toyokawa, T. Uchida and K. Ishibashi, THz photon assisted tunneling in carbon-nanotube quantum dots, Journal of Applied Physics 103, 034307 (2008). [2] P. K. Tien and J. P. Gordon, Multiphoton Process Observed in the Interaction of Microwave Fields with the Tunneling between Superconductor Films, Phys. Rev. 129, 647 (1963).

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