## Abstract Submitted for the MAR09 Meeting of The American Physical Society

Microwave Rectification by Carbon Nanotube Schottky Diodes ENRIQUE COBAS, STEVEN ANLAGE, MICHAEL FUHRER, Department of Physics and Center for Nanophysics and Advanced Materials, University of Maryland College Park — We report the fabrication and electrical characterization of carbon nanotube Schottky diodes (CNT-SDs) via photolithography on high-frequency-compatible substrates using dissimilar contacts of chromium and platinum. The diodes are well-described by the ideal diode equation (n = 1.0). DC and low-frequency behavior is compared to a model of a diode in series with a resistor. The diodes rectify microwave signals beyond 18GHz and produce dc currents of hundreds of nanoamperes. The frequency and voltage dependence is used to estimate the junction capacitance of 1aF and an intrinsic device cut-off frequency of 400GHz.

[1] Cobas, E. and Fuhrer, M., Applied Physics Letters 93, 043120 (2008).

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Date submitted: 17 Dec 2008 Electronic form version 1.4