Abstract Submitted
for the MAR06 Meeting of
The American Physical Society

Electronic Transport in Individual Carbon Nanotube P-N Junction Diodes NATHANIEL GABOR, Laboratory of Solid State Physics, Cornell University, KEN BOSNICK, National Institute for Nanotechnology, National Research Council of Canada , PAUL MCEUEN, Laboratory of Solid State Physics, Cornell University — We have investigated electronic transport in single-walled carbon nanotube p-n junction diodes formed using gates to electrostatically dope the tube. Previous measurements [1] have shown that such diodes demonstrate nearly ideal turn-on behavior at room temperature and low biases, consistent with thermal activation over the junction barrier. We have performed measurements over a broad temperature range and have verified that the transport is by thermal activation. From the temperature dependence of the current-voltage characteristics, we can extract the nanotube band gap and the transmission coefficient through the p-n junction region. [1] J.U. Lee et al, App. Phys. Lett. **85**, 145 (2004)

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Date submitted: 03 Dec 2005 Electronic form version 1.4