Abstract Submitted
for the MAR08 Meeting of
The American Physical Society

Anomalous Coulomb oscillation in crossed carbon nanotubes SEUNG JAE BAEK, Nano Systems Institute-National Core Research Center, Seoul National University, DONGSU LEE, Department of Physics and Astronomy, Seoul National University, SEUNG JOO PARK, Nano Systems Institute-National Core Research Center, Seoul National University, YUNG WOO PARK, Department of Physics and Astronomy, Seoul National University, JOHANNES SVENSSON, Department of Physics, Gothenburg University, SE-41296 Gothenburg, Sweden, MATS JONSON, Department of Physics, Gothenburg University, SE-41296, Sweden, ELEANOR E. B. CAMPBELL, Department of Physics, Gothenburg University, SE-41296 Gothenburg, Sweden — Single-walled carbon nanotube (SWCNT) crossed junctions separated by an insulating layer were fabricated to investigate the double quantum dot modulated by a single gate (DQD-sG). Anomalous Coulomb oscillations were observed on the lower CNT at low temperature, where the behavior was interpreted by the concept of a double quantum dot (DQD) system http://scitation.aip.org/getabs/servlet/GetabsServlet?prog=normal&id =APPLAB000089000023233107000001&idtype=cvips&gifs=yes [1]. To understand it more clearly, we have intentionally fabricated crossed CNTs without oxide layer in between. The observed anomalous Coulomb oscillations indicate that the contact resistance between the two tubes becomes a potential barrier splitting the initial single QD into the DQD, and the back-gate modulates the energy levels of the DQD.

Yung Woo Park
Department of Physics and Astronomy, Seoul National University

Date submitted: 01 Dec 2007 Electronic form version 1.4