

Abstract Submitted
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Reversible current blockade of carbon nanotube through well resolved multitrapped-interactions¹ TSZ WAH CHAN, Dept of Physics, Univ of Virginia, SMITHA VASUDEVAN, Dept of ECE, Univ of Virginia, BRIAN BURKE, KENNY EVANS, Dept of Physics, Univ of Virginia, KAMIL WALCZAK, MINGGUO LIU, JOE CAMPBELL, AVIK GHOSH, Dept of ECE, Univ of Virginia, KEITH WILLIAMS, Dept of Physics, Univ of Virginia — We report the observation of a new kind of multiple-trap random telegraph signal (RTS) in the electronic transport of a carbon nanotube field effect transistor at room temperature. RTS from one charge trap precedes a transition to strong current blockade continues over a well-defined bias window, and subsequently reverses to unblock through a separate RTS series arising from a second, adjacent trap thru pure electrostatic interaction. Our results suggest that multiple-trap behavior in low-dimensional field-effect devices may be adaptable for several new transistor and sensor technologies.

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