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Transient Random Telegraph Signal in carbon nanotube field effect transistors TSZ-WAH CHAN, BRIAN BURKE, KENNY EVANS, KEITH WILLIAMS, Department of Physics, University of Virginia — We have studied transient *Random Telegraph Signal* (RTS) induced in carbon nanotube-channel field effect transistors (FETs) by operating them at high bias. RTS arises from the population and depopulation of charge traps at specific energies that are scanned by sweeping the gate in a FET. At high bias, surface adsorbates/dopants interact with the SWNT and produce transient charge traps, which are manifest in the RTS signature. Transient RTS has been seen at temperatures from 200K up to room temperature. We speculate that RTS spectra could provide a characteristic signature of specific adsorbates or adducts on the nanotube channel. This capability is of interest not only for potential sensing technology but also provides a way to introduce controllable quantum interference resonances in the channel transport.

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