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Effect of diameter and contacts on electron transport in carbon nanotubes ALEXEI SVIZHENKO, M.P. ANANTRAM, Center for Nanotechnology, NASA Ames Research Center, Moffett Field, CA 94035 — We study the effect of nanotube diameter and contact quality on screening properties and current carrying capacity of single- and multi-wall carbon nanotubes. Depending on the diameter, the differential conductance shows qualitatively different behavior versus bias: decreasing for small diameter and increasing for large diameter nanotubes. We find that while the screening is better for smaller diameter nanotubes at low bias, this trend is reversed at high bias. The quality of the contacts can also make a significant difference between increasing or decreasing trends of differential conductance versus bias.

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