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**Electronic compressibility of individual suspended carbon nanotubes** NEDA LOTFIZADEH, Department of Physics and Astronomy, University of Utah, Salt Lake City, Utah 84112-0830, DANIEL R. MCCULLEY, ETHAN MINOT, Department of Physics, Oregon State University, Corvallis, Oregon 97331, VIKRAM V. DESHPANDE, Department of Physics and Astronomy, University of Utah, Salt Lake City, Utah 84112-0830 — Carbon nanotubes (CNTs) are extraordinary one-dimensional systems, which have attracted great attention due to their chemical stability, mechanical strength and transport properties. Suspended CNTs are a good candidate to study the intrinsic properties of these tubes, since they are isolated and don't have any interactions with other tubes or the substrate. Moreover, they provide a clean system to study the effect of many body interactions in one-dimension. Due to the strong electron-electron interactions in CNTs, their electronic properties are described by Luttinger liquid theory. One of the observables of this theory is electronic compressibility, which is strongly modified due to many body interactions. In this work we study the compressibility of CNTs with different band gaps as a function of electron density using low temperature quantum transport measurements. Furthermore, these CNTs are optically characterized to determine their structure for comparison with theory. Based on the nanotubes we have measured so far, we have found a scaling similar to that predicted by a theory that accounts for both interactions and the band gap of CNTs. We will report on our latest experimental results and interpretation.

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