

Abstract Submitted  
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**Scanning gate microscopy of metallic carbon nanotubes** JIAMIN XUE, BRIAN LEROY, University of Arizona — The one dimensional nature of metallic single-walled carbon nanotubes (SWCNTs) causes their low energy properties to be described by Luttinger liquid theory. Using low-temperature scanning probe microscopy and electrical transport measurements, we have investigated the electronic properties of metallic SWCNTs. An AFM operating at 300 mK was used to probe the SWCNTs using scanning gate microscopy. Using a voltage on the AFM tip, we are able to probe the spatial dependence of the conductance. Spatially resolved images of conductance show rings with a modulation as a function of AFM tip position, which is consistent with Luttinger liquid theory. The ability to perform simultaneous electrical transport and scanning probe microscopy measurements allows us to test theoretical predictions about Luttinger liquids including spin-charge separation.

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