

Abstract Submitted  
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**Near-field optical study of individual single-walled carbon nanotubes** ZHIWEN SHI, XIAOPING HONG, UC Berkeley, HANS BECHTEL, MICHAEL MARTIN, Lawrence Berkeley National Laboratory, YUEN-RON SHEN, FENG WANG, UC Berkeley — Quantum-confined electrons in one dimension (1D) behave as Luttinger liquid, a strongly correlated electronic matter distinctly different from Fermi liquid. Metallic single-walled carbon nanotubes (SWNTs), with their strong quantum confinement and structural simplicity, provide the ideal model system for Luttinger liquid. Direct experimental observation of Luttinger liquid in SWNTs, however, proves to be surprisingly challenging. Through near-field optical study, we demonstrated conclusively a robust Luttinger liquid in metallic SWNTs at room temperature.

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