

Abstract Submitted
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Gate-controlled Tomonaga-Luttinger liquid in peapods JUNJI HARUYAMA, JUN MIZUBAYASHI, Aoyama Gakuin University, TOSHIYA OKAZAKI, TAKESHI NAKANISHI, AIST, HISANORI SHINOHARA, Nagoya University, YUJI AWANO, NAOKI HARADA, Fujitsu Laboratory — We report the charge transport properties of peapods encapsulating a chain of C60 within a field-effect transistor (FET) structure. We find they are very sensitive to the back gate voltage applied and power laws with large power exponents (between 12 and 1), findings not observed before in carbon nanotubes. Based on atomic-like behaviors observed in the single charging effect, we reveal that part of the power laws (between 3 and 1) arises from a Tomonaga-Luttinger liquid with strong electron-electron interaction, which originates from the large number of occupied subbands due to our peapod's unique electronic states.

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