Abstract Submitted
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Enhanced Conductance Fluctuation by Quantum Confinement Effect in Graphene Nanoribbons[1] GUANGYU XU, Dept. Electrical Engineering, UCLA, CARLOS TORRES JR., JIANSHI TANG, UCLA EE, JINGWEI BAI, Dept. Material Science and Engineering, UCLA, EMIL SONG, UCLA EE, YU HUANG, UCLA MSE, XIANGFENG DUAN, Dept. Chemistry and Biochemistry, UCLA, YUEGANG ZHANG, Molecular Foundry, LBNL, WANG KANG, UCLA EE, UCLA EE TEAM, UCLA MSE TEAM, UCLA CHEM TEAM, LBNL TEAM — Conductance fluctuations are usually unavoidable in graphene nanoribbons (GNR) due to the presence of disorder along its edges. By measuring the low-frequency noise in GNR devices, we find that the conductance fluctuations are strongly correlated with the density-of-states of GNR [1]. In single-layer GNR, the gate-dependence of noise shows peaks whose positions quantitatively match the subband positions in the band structures of GNR. This correlation provides a robust mechanism to electrically probe the band structure of GNR, especially when the subband structures are smeared out in conductance measurement.

[1]. G. Xu et al. Nano Lett. 2010, 10, 4590–4594.

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