

Abstract Submitted
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Non-linear Conductance Study of Electron Correlation Effects in Asymmetric Quantum Point Contacts¹ HAO ZHANG, Duke University, PHILLIP WU, Stanford University, ALBERT CHANG, Duke University — Both the linear and non-linear(dI/dV) conductance of highly asymmetric quantum point contacts (QPCs) show evidence of quasi-bound states formation² and Kondo-related physics.³ . The non-linear conductance of highly asymmetric QPCs shows additional peaks near zero bias below the first quantized conductance level ($2e^2/h$) at low temperature (down to 25 mK). We have studied the evolution of these extra peaks by tuning the gate voltages at different temperature and different in plane magnetic field. By investigating the evolution of these extra peaks, which can not be fully understood by conventional theory, we explore the possible connections with electron correlation and spin correlated physics.

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²P. Wu, P. Li, H. Zhang, A. M. Chang, *Phy. Rev. B*, 85, 085305(2012)

³H. Zhang, P. Wu, A. M. Chang, *Phy. Rev. B*, 88, 075311(2013)

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