Abstract Submitted
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Non-linear conductance of a short quantum point contact[1] TAI-MIN LIU, MARYAM TORABI, AMIR MAHARJAN, ANDREI KOGAN, University of Cincinnati, MICHAEL MELLOCH, Purdue University, STEVEN HERBERT, Xavier University — We have measured non-linear conductance G of a very short, less than 80 nm in lithographic length, quantum point contact as a function of the source-drain voltage V_{sd} and gate voltage V_g at the device lattice temperature T<20 mK. The width/length ratio of the QPC is approximately 2.5. We observe several well-resolved plateaus in G at V_{ds}=0, but find no prominent zero-bias peak in $G(V_{ds})$ reported by several groups in longer, lower aspect ratio contacts at near-opening gate voltage [1,2]. The peak is believed to arise due to Kondo-like correlations between a quasi-local magnetic state in the constriction [1,3] and the device leads. Our data suggest that the quasi-bound spin state does not form in short QPCs and agree qualitatively with the recent predictions [3]. [1] S.M. Cronenwett et. al. *Physical Review Letters*, 88(226805), 2002. [2] E.J. Koop et. al. *J Supercond Nov Magn*, 20:433, 2007.[3]Tomaz Rejec and Yigal Meir. *Nature*, 442:900, 2006.

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