Abstract Submitted
for the MAR12 Meeting of
The American Physical Society

Rectification in Y-junctions of Luttinger liquid wires[1] CHENJIE WANG, D.E. FELDMAN, Brown University — We investigate rectification of a low-frequency ac bias in Y-junctions of one-channel Luttinger liquid wires with repulsive electron interaction. Rectification emerges due to three scatterers in the wires. We find that it is possible to achieve a higher rectification current in a Y-junction than in a single wire with an asymmetric scatterer at the same interaction strength and voltage bias. The rectification effect is the strongest in the absence of the time-reversal symmetry. In that case, the maximal rectification current can be comparable with the total current $\sim e^2V/h$ even for low voltages, weak scatterers and modest interaction strength. In a certain range of low voltages, the rectification current can grow as the voltage decreases. This leads to a bump in the I-V curve.

[1] Chenjie Wang and D. E. Feldman, Phys. Rev. B **83**, 045302 (2011).

[1]We acknowledge funding for this project from NSF under grants number DMR-0544116 and PHY05-51164 and the U.S. Department of Energy, grant number DE-SCOOO1556.

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Date submitted: 08 Nov 2011 Electronic form version 1.4