Abstract Submitted
for the MAR08 Meeting of
The American Physical Society

Magnetoconductance of interacting electrons in quantum wires in the integer quantum Hall regime. IGOR ZOZOULENKO, SIARHEI IHNATSENKA, Linkoping University — We present systematic quantitative description of the magnetoconductance of the split-gate quantum wires. Accounting for the exchange and correlation interactions within the spin density function theory (DFT) leads to the lifting of the spin degeneracy and formation of the spin-resolved plateaus at odd values of e^2/h. We show that the width of the odd conductance steps in the spin DFT calculations is equal to the width of the transition intervals between the conductance steps for the spinless Hartree electrons. A detailed analysis of the structure of compressible/incompressible strips and the evolution of the Hartree and the spin-DFT subband structure provides an explanation of this finding. Our spin-DFT calculations reproduce not only qualitatively, but rather quantitatively all the features in the magnetoconductance observed in the experiment [1] including the unexpected effect of the collapse of the odd conductance plateaus at lower fields.
[1] I. P. Radu, J. B. Miller, S. Amasha, E. Levenson-Falk, D. M. Zumbuhl, M. A. Kastner, C. M. Marcus, L. N. Pfeiffer, and K. W. West, unpublished.

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Date submitted: 21 Nov 2007 Electronic form version 1.4