

Edge Channel Interferometry in the Quantum Hall Regime

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The lecture will be split into four parts: after a general introduction into Quantum Hall physics I will describe the basics of scanning gate microscopy. Next, I will review the state-of-the-art in edge channel interferometry. Finally, I will discuss our recent results obtained by scanning gate microscopy on samples in the Quantum Hall regime.

Further reading:

Klaus von Klitzing: *The quantized Hall effect*, Nobel lecture, 1985

(http://nobelprize.org/nobel_prizes/physics/laureates/1985/klitzing.pdf)

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A. C. Gossard: *Imaging coherent electron flow from a quantum point contact*, Science 289
(2000) 2323.

M. A. Topinka, B. J. LeRoy, R. M. Westervelt, S. E. J. Shaw, R. Fleischmann, E. J. Heller, K. D.
Maranowski, and A. C. Gossard: *Coherent branched flow in a two-dimensional electron
gas*, Nature 410 (2001) 183.

Yang Ji, Yanchui Chung, D. Sprinzak, M. Heiblum, D. Mahalu, and Hadas Shtrikman: *An
electronic Mach-Zehnder interferometer*, Nature 422 (2003) 415.

N. Paradiso, S. Heun, S. Roddaro, D. Venturelli, F. Taddei, V. Giovannetti, R. Fazio, G. Biasiol, L.
Sorba, and F. Beltram: *Spatially resolved analysis of edge-channel equilibration in quantum
Hall circuits*, Phys. Rev. B 83 (2011) 155305.

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Selective control of edge-channel trajectories by scanning gate microscopy, Physica E 42
(2010) 1038.