Correlated electron transport in mesoscopic structures

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Focus: Electronic Theory of Nanostructures

Ongoing projects:

1. Quantum coherence in nanostructures
2. Electronic nanostructures out of equilibrium

Educational effort:

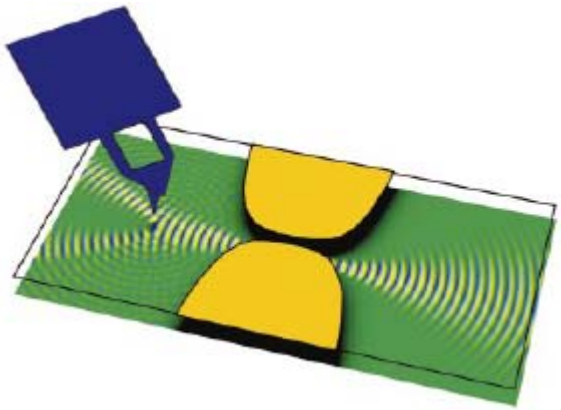
Maxim Vavilov – postdoctoral work at the University of Minnesota, currently a postdoctoral researcher at Yale University;

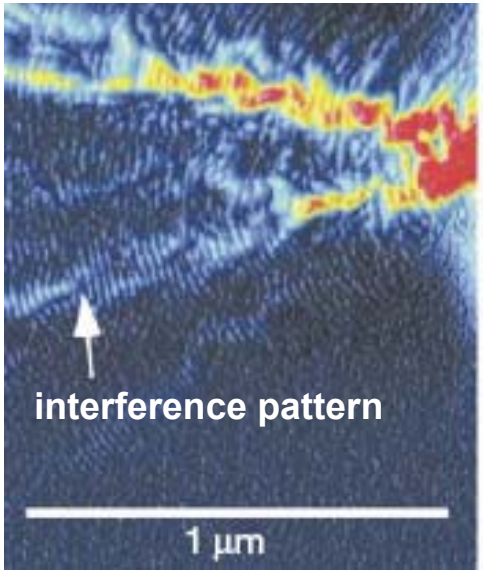
Iddo Ussishkin and Manuel Houzet – finishing the first year of postdoctoral work at the University of Minnesota

Marcus Garst – started postdoctoral work at the University of Minnesota this academic year

Alex Levchenko – started as a graduate student at the University of Minnesota this academic year

Probing the Spin-Charge Separation with a Scanning Microscope

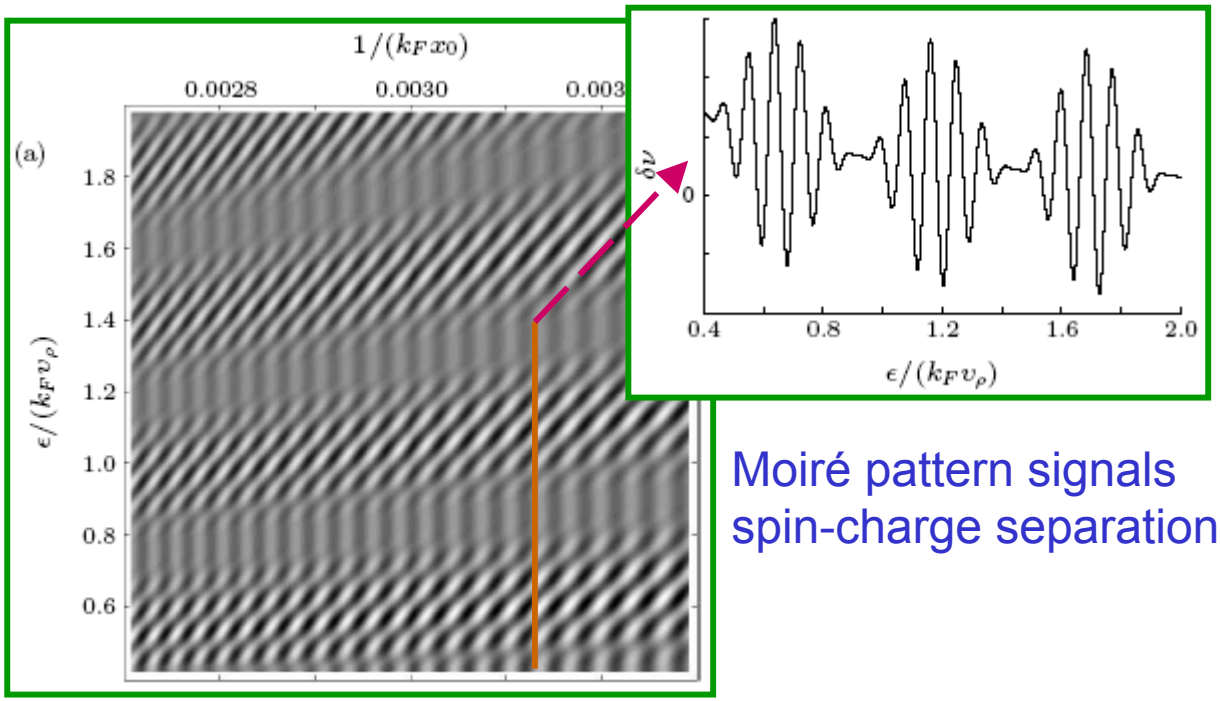




M.A. Topinka *et al*, Nature **410**, 183 (2001)

The scanning probe technique enables one to image the electron interference in planar (two-dimensional, 2D) conductors

Our theory: scanning of quantum wires (1D conductors) may reveal "splitting" of electrons into the charge and spin modes



Moiré pattern signals spin-charge separation

I. Ussishkin and L.I. Glazman, cond-mat/0407009 (July 2004)