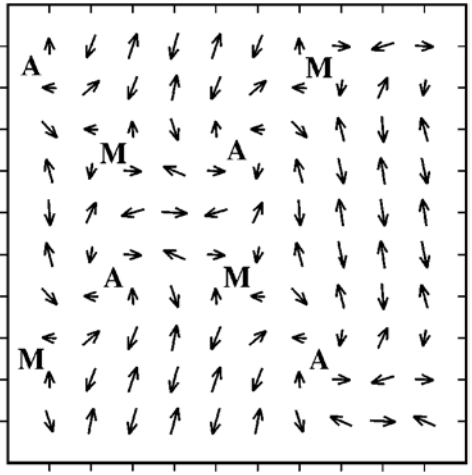
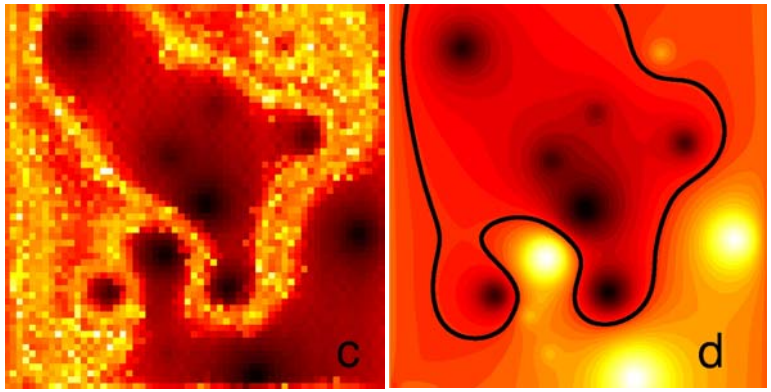


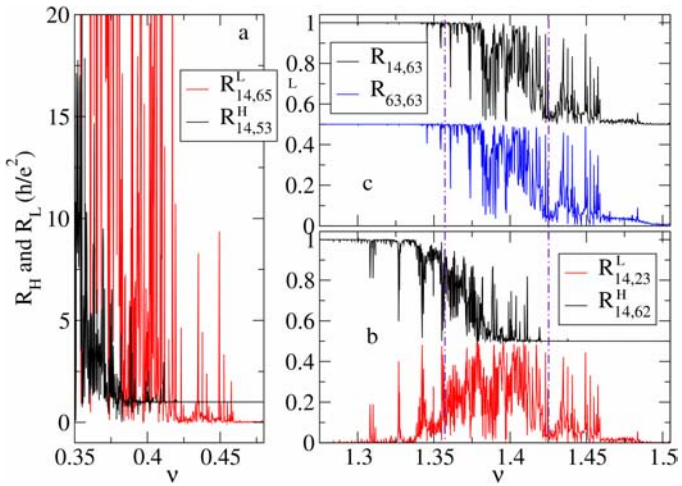
Meron model for cuprate high-Tc superconductivity



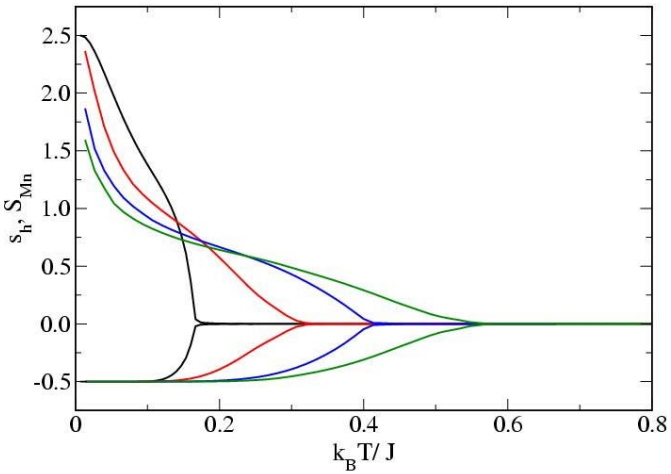
Interplay between a periodic modulation and disorder in the integer quantum Hall effect

Mona Berciu (UBC)

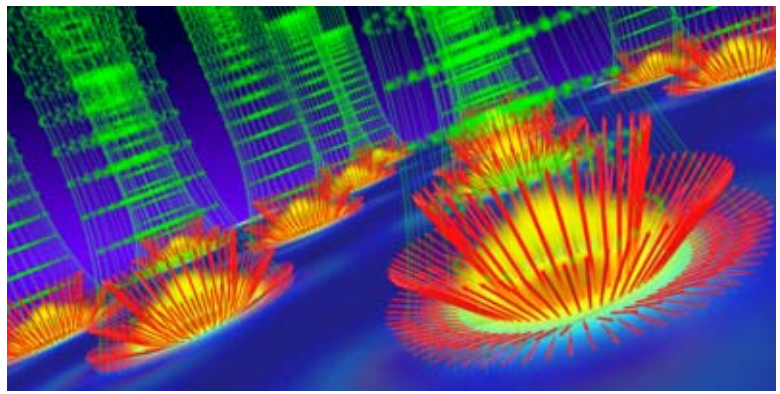
So far, research in:



Transport in mesoscopic systems



Magnetic properties of diluted magnetic semiconductors



Spintronic (nano)devices based on paramagnetic diluted magnetic semiconductors

Plans for future research, of potential interest to the Center:

→ continue study of spintronic devices based on diluted magnetic semiconductors plus nano-magnets or superconductors; investigate other possible combinations of such complex materials.

→ extend expertise to study of transport properties (spin, charge, heat, etc.) in meso- and nanosystems, away from the linear regime, using Keldysh non-equilibrium Green's functions; develop efficient and stable numerical methods to solve such types of problems.

→ longer term: interest in role of screening on behavior of low-D devices; possible interest in transport in organic materials, etc.

Benefits from link to the Center:

→ collaboration with experimental groups to test new theoretical predictions, or realize spintronic or other devices proposed by my group;

→ collaboration with experimental groups to analyze experimental data obtained;