FIM Minicourse

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Vortices in the Ginzburg-Landau model of superconductivity

March 6 to 18, 2014

Thu	March 6,	14:15 - 16:00
Fri	March 7,	10:15 - 12:00
Mon	March 10,	14:15 - 16:00
Tue	March 11,	10:15 - 12:00
Mon	March 17,	14:15 - 16:00
Tue	March 18,	10:15 - 12:00

HG G 19.1, ETH Zürich, Rämistrasse 101

Abstract

In the Ginzburg-Landau model of superconductivity, quantized vortices appear when the parameter corresponding to the intensity of the applied magnetic field is large enough. These vortices repel each other and tend to organize themselves in perfect triangular lattices, called „Abrikosov lattices". This minicourse is aimed at describing some recent results towards justifying the Abrikosov lattices in minimizers of the two-dimensional model. It will start with some heuristics on the onset of these vortices, continue with the main mathematical tools that can be used to understand it rigorously, then derive the leading order „mean field model" which describes the average density of vortices, and finish with a description of results on the microscopic behavior of the vortices and the lattice problem. Comparisons will be drawn with Coulomb gases.

This is based on joint works with Etienne Sandier.

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