



Sylvia Serfaty

Université Pierre et Marie Curie Paris 6, France

serfaty@ann.jussieu.fr

<http://www.ann.jussieu.fr/~serfaty/>

Sylvia Serfaty is a Professor at the Laboratoire Jacques-Louis Lions, Université Pierre et Marie Curie Paris 6. She has been awarded a Sloan Foundation Research Fellowship and a NSF CAREER award (2003), the 2004 European Mathematical Society Prize, 2007 EURYI (European Young Investigator) award, and has been invited speaker at the International Congress of Mathematicians (2006), Plenary speaker at the European Congress of Mathematics (2012) and has recently received the IAMP Henri

Poincaré prize in 2012. Her research is focused on the study of Nonlinear Partial Differential Equations, calculus of variations and mathematical physics, in particular the Ginzburg-Landau superconductivity model.

Questions of crystallization in Coulomb systems

Abstract

I will discuss systems of points with Coulomb interaction. An instance is the classical Coulomb gas, another is vortices in the Ginzburg-Landau model of superconductivity, where one observes in certain regimes the emergence of densely packed point vortices forming perfect triangular lattice patterns, named Abrikosov lattices in physics. In joint works with Etienne Sandier and with Nicolas Rougerie, we studied both systems and derived a "Coulombian renormalized energy". I will present it, examine the question of its minimization and its link with the Abrikosov lattice and weighted Fekete points. I will show how it leads to expecting crystallization, and discuss this sort of problems.