Séminaire : Problèmes spectraux en physique mathématique

Les séminaires ont lieu à l'**Institut Henri Poincaré**, 11 rue Pierre et Marie Curie, 75005 Paris.

Programme du lundi 12 mai 2014, en **salle 314** (3e étage)

— 11h15 - 12h15 : **Jérémy Faupin** (Univ. Lorraine)
On quantum electrodynamics of atomic resonances

We consider a simple model of an atom interacting with the quantized electromagnetic field. The atom has a finite mass, finitely many excited states, and an electric dipole moment proportional to the elementary electric charge. We establish the existence of resonances associated to the excited states of the atom, and we prove that these resonances are analytic functions of the total momentum p and of the coupling constant, provided $|p| < mc$ (where m is the mass of the atom and c is the speed of light) and assuming the coupling constant is small enough.
The proof relies on a somewhat novel inductive construction involving a sequence of 'smooth Feshbach-Schur maps' applied to a complex dilatation of the original Hamiltonian, which yields an algorithm for the calculation of resonance energies that converges superexponentially fast.
Joint work with M. Ballesteros, J. Fröhlich and B. Schubnel.

— 14h - 15h : **Nicolas Rougerie** (Grenoble)
The Ginzburg-Landau model in the surface superconductivity regime

The Ginzburg-Landau functional is a phenomenological model describing the response of a superconductor to an applied magnetic field. In this talk I will present new results about the ground state of the functional for type II superconductors in magnetic fields varying between the second and third critical fields. In this regime, superconductivity is a surface phenomenon, restricted to a thin layer along the boundary of the sample. Our results show that the Ginzburg-Landau energy is, to subleading order, entirely determined by the minimization of simplified 1D functionals. The leading order of the energy is given by a universal, sample-independent, problem, whereas corrections depend on the curvature of the sample. Refined estimates on the Ginzburg-Landau minimizer follow from these energy estimates.
Joint work with Michele Correggi.

— 15h15 - 16h15 : **Hakim Boumaza** (Paris-Nord)
Random scattering zippers

A scattering zipper is a system obtained by concatenation of scattering events with equal even number of incoming and out going channels. The associated scattering zipper operator is the unitary equivalent of Jacobi matrices with matrix entries and it also generalizes CMV matrices. Using the formalism of transfer matrices, one can get an explicit expression for the resolvent of the operator which is used to prove a bijection between the set of semi-infinite scattering zipper operators and matrix valued probability measures on the unit circle. We then consider a random version of the scattering zipper where the randomness appears through random phases. For this random model, Lyapunov exponents positivity is proved and yields to the absence of absolutely continuous spectrum.
This is a joint work with Laurent Marin.

Pour tout renseignement, contacter les organisateurs
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