Séminaire : Problèmes spectraux en physique mathématique

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

Programme du lundi 16 octobre 2017, en **salle 314** (3e étage)

— 11h15 - 12h15 : **Jimmy Lamboley** (Paris 7)
About optimal shapes for the Dirichlet-Laplace operator.

We are interested in optimal estimates of the eigenvalues (or functions of eigenvalues) of the Laplace operator with Dirichlet boundary conditions, involving geometrical informations of the considered domains. We will briefly review some well-known results on this topic, and then focus on new existence and regularity results for problems involving the perimeter of the domain. We will conclude with some remarks, results, and open problems when domains are assumed to be convex.

— 14h - 15h : **Nikhil Savale** (Cologne)
A Gutzwiller type trace formula for the magnetic Dirac operator.

For manifolds including metric-contact manifolds with non-resonant Reeb flow, we prove a Gutzwiller type trace formula for the associated magnetic Dirac operator involving contributions from Reeb orbits on the base. The method combines the use of almost analytic continuations and local index theory. The construction of appropriate microlocal weight/trapping functions then allows extension of the formula to large time. As an application, we prove a semiclassical limit formula for the eta invariant of the Dirac operator.

— 15h15 - 16h15 : **Sébastien Breteaux** (Metz)
Quantum Mean Field Asymptotics and Multiscale Analysis.

In this work, we study how multiscale analysis and quantum mean field asymptotics can be brought together. In particular we study when a sequence of one-particle density matrices has a limit with two components : one classical and one quantum. The introduction of "separating quantization for a family" provides a simple criterion to check when those two types of limits are well separated. We give examples of explicit computations of such limits, and how to check that the separating assumption is satisfied.
This is joint work with Z.Ammari and F.Nier.

Pour tout renseignement, contacter les organisateurs
Hakim Boumaza (boumaza@math.univ-paris13.fr)
Mathieu Lewin (mathieu.lewin@math.cnrs.fr)
Stéphane Nonnenmacher (stephane.nonnenmacher@u-psud.fr)
http://ipht.cea.fr/Images/Pisp/snonnenmacher/tournant/seminairetournant.html