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 13 mai 2019, en **salle 201** (2e étage)

— 11h15 - 12h15 : **Vedran Sohinger** (Warwick)
Gibbs measures of nonlinear Schrödinger equations as limits of many-body quantum states

Gibbs measures of nonlinear Schrödinger equations are a fundamental object used to study low-regularity solutions with random initial data. In the dispersive PDE community, this point of view was pioneered by Bourgain in the 1990s. We study the problem of the derivation of Gibbs measures as high-temperature limits of thermal states in many-body quantum mechanics.
The first result on this problem was obtained by Lewin, Nam and Rougerie by using variational methods. In our work, we apply a perturbative expansion in the interaction. This expansion is then analysed by means of Borel resummation techniques. In two and three dimensions, we need to apply a Wick-ordering renormalisation procedure. In the first part of the talk, we study the regime when the interaction potential is bounded and defocussing. In the second part of the talk, we extend this result to the optimal range of L^p defocussing interaction potentials.
This is based partly on joint work with Jürg Fröhlich, Antti Knowles and Benjamin Schlein.

— 14h - 15h : **Loïc Le Treust** (Marseille)
On the semiclassical spectrum of the Dirichlet-Pauli operator

This talk is devoted to semiclassical estimates of the eigenvalues of the Pauli operator on a bounded open set whose boundary carries Dirichlet conditions. Assuming that the magnetic field is positive and a few generic conditions, we establish the simplicity of the eigenvalues and provide accurate asymptotic estimates involving Bergman-Hardy spaces associated with the magnetic field.

— 15h15 - 16h15 : **Dan Mangoubi** (Jérusalem)
Multiplicity of eigenvalues for the circular clamped plate problem

A celebrated theorem of C.L. Siegel from 1929 shows that the multiplicity of eigenvalues for the Laplace eigenfunctions on the unit disk is at most two. More precisely, Siegel shows that positive zeros of Bessel functions are transcendental. We study the fourth order clamped plate problem, showing that the multiplicity of eigenvalues is uniformly bounded (by not more than six). Our method is based on new recursion formulas and Siegel-Shidlovskii theory.
The talk is based on a joint work with Yuri Lvovski.