Séminaire : Problèmes spectraux en physique mathématique

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

Programme du lundi 18 mars 2013, Amphithéâtre Darboux (RdC)

Entre avril et juin 2013 le séminaire sera intégré au trimestre thématique "Spectral and Variational Methods in Quantum Mechanics".

- 11h15 - 12h15 : **Zeév Rudnick** (Tel-Aviv University)
  Nodal intersections.

  We study the fine structure of nodal lines for eigenfunctions of the Laplacian on a surface, by examining the number of intersection of the nodal lines with a fixed reference curve. It is expected that in many cases the number of these intersections is bounded above by the wave number k (the square root of the eigenvalue). Very little is known concerning lower bounds. For the flat torus, we prove the expected upper bound of k and give a lower bound of almost the same quality. To do so, we connect this problem to bounds on the L^p norms of the restrictions of the eigenfunctions to the curve, and to a problem in Number Theory. (joint work with Jean Bourgain).

- 14h - 15h : **Eric Séré** (Paris-Dauphine)
  Kink solutions in a simplified model of Polyacetylene.

  We consider a simplified model of Polyacetylene introduced by Su, Schrieffer and Cheeger in 1979, which belongs to the class of Peierls models at half-filling. In 1987 Kennedy and Lieb studied finite chains and proved that if the number N of nuclei is even, the energy has exactly two minimisers which are periodic of period 2, and are translates of one another by a translation of one unit in the lattice. We study rigorously the case of an odd number of atoms. We prove that if N is odd and converges to infinity, the global minimizer of the energy converges to a "kink" soliton in the infinite chain. This soliton is asymptotic to one of the periodic minimizers found by Kennedy-Lieb in one direction of the chain, and to the other solution in the other direction.
  This is joint work with Mauricio Garcia Arroyo.

- 15h15 - 16h15 : **Francis Nier** (ENPC & Rennes)
  Asymptotique basse température pour des distributions quasi-stationnaires en domaine borné.

  Après avoir introduit les notions de mesures quasi-stationnaires sur des ouverts et précisé les questions qui se posent naturellement sur ces objets à partir de la mise en oeuvre d'algorithmes de dynamique moléculaire, j'expliquerai comment l'analyse semi-classique des Laplaciens de Witten à bord permet de résoudre ces problèmes.
  Travail en commun avec Tony Lelièvre.

Pour tout renseignement, contacter les organisateurs
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