

South-West UK Analysis Meeting

University of Bath, 21 January 2009

The meeting will take place in Room 6W1.2

Programme

10.30–11.15 ARRIVAL. REGISTRATION. COFFEE.

11.20–12.05 FRÉDÉRIC KLOPP (UNIVERSITÉ PARIS 13)

Resonances for large ergodic systems

In this talk, we consider Schrödinger operators of the form $H_L = -\Delta + V_L$ where V_L is the restriction to a large cube of an ergodic potential V . The size of the cube is controlled by the large parameter L . We study the resonances i.e. the poles of the scattering matrix of H_L in the large L limit. Depending on the characteristics of the ergodic Hamiltonian $-\Delta + V$, the resonances, in particular, the resonances width, exhibit very different behaviors. We will concentrate on two cases, the case of a periodic V and that of an homogeneous random V . The presented work is still in progress.

12.10–12.55 GIANNI DAL MASO (SISSA, TRIESTE)

Quasistatic crack growth in finite elasticity with non-interpenetration

We present a variational model to study the quasistatic growth of brittle cracks in hyperelastic materials, in the framework of finite elasticity, taking into account the non-interpenetration condition.

13.00–14.20 LUNCH

14.30–15.15 JIM WRIGHT (UNIVERSITY OF EDINBURGH)

Variational inequalities in harmonic analysis

Recently there has been considerable interest in upgrading maximal function estimates to variational inequalities. We will outline some progress in this area and discuss a connection with spectral questions for 1-d Schrödinger operators.

15.20–16.05 MARC BRIANE (CENTRE DE MATHÉMATIQUES, INSA, RENNES)

Homogenization of high conductivity problems in dimension two. Two approaches.

This work in collaboration with J. Casado-Díaz deals with the asymptotic behavior of two-dimensional linear conduction problems for which the sequence of conductivity matrices is equi-coercive but not necessarily bounded from above. Two approaches are presented. The first one is based on an extension of the div-curl lemma, which is restricted to dimension two. This new div-curl lemma allows us to derive a H -convergence type result for any sequence of conductivity matrices which is bounded in L^1 . The second approach is based on a uniform convergence result satisfied by the minimizers of the diffusion energies in dimension two. From this we deduce that any equi-coercive sequence of diffusion energies Γ -converges to a diffusion without assuming any bound from above. These two compactness results do not hold in dimension greater than two due to the possible appearance of nonlocal effects.

16.10–16.45 COFFEE

16.50–17.35 PATRICK GERARD (UNIVERSITÉ PARIS-SUD 11)

On the cubic Szegő equation

I shall discuss a new Hamiltonian equation, which is a toy model for degenerate dispersive evolutions. I will focus on the study of traveling waves, and on the unexpected existence of a Lax pair for this equation.

18.45– DINNER