

Journée de séminaires EDP

14 novembre 2014

9h30 **Mariana Haragus** *Stability of gravity-capillary periodic water waves*

Abstract: We study the stability of two-dimensional gravity-capillary periodic water waves in the case of large surface tension. In this parameter regime, predictions based on model equations suggest that periodic travelling waves are stable with respect to two-dimensional perturbations, and unstable with respect to three-dimensional perturbations which are periodic in the direction transverse to the direction of propagation. In this talk we show that these predictions are confirmed for the full Euler equations describing this hydrodynamic problem.

10h30 **Pause café.**

11h00 **Marco Marletta** *On the stability of a forward-backward heat equation*

Abstract: Joint work with Lyonell Boulton and David Rule.

We examine spectral properties of a family of periodic singular Sturm-Liouville problems which are highly non-self-adjoint but have purely real spectrum. The problem originated from the study of the lubrication approximation of a viscous fluid film in the inner surface of a rotating cylinder and has received a substantial amount of attention in recent years. Our main focus will be the determination of Schatten class inclusions for the resolvent operator and regularity properties of the associated evolution equation.

13h30 **Nikolay Tzvetkov** *Blow up at infinity for the cubic defocusing Schroedinger equation*

Abstract: The goal of the talk is to describe recent results of Zaher Hani, Benoit Pausader, Nicola Visciglia and the speaker on the long time behavior of NLS on product spaces with a particular emphasis on the existence of solutions with growing higher Sobolev norms.

14h30 **Anne de Bouard** *The stochastic Landau-Lifshitz equation*

Abstract: We will review some recent results on the stochastic Landau-Lifshitz equation which models temperature effects on magnetization dynamics in micro-magnetism. We will in particular propose a new convergent time semi-discrete scheme, which is linearly implicit and does not require the resolution of a nonlinear problem at each time step.

15h30 **Pause café.**

16h00 **Éric Séré** *The Peierls model of molecular chains*

Abstract: The Peierls model describes independent electrons in a deformable one-dimensional finite or infinite chain of atoms. The atoms are treated as classical objects and the electrons are described by a simplified version of quantum mechanics. This leads to a system of coupled, discrete, nonlinear and nonlocal equations. I will present some mathematical questions on this model, some known rigorous results, and in particular a work in collaboration with Mauricio Garcia Arroyo.