Quatrièmes journées "Besançon-Neuchâtel" d'Analyse Fonctionnelle.

Besançon, les 13 et 14 mai 2014.

Programme du Mardi 13 mai (salle 316B).

À partir de 11h : accueil des participants.

12h : Déjeuner

13h30 - 14h15 : M. Bacak (Max Planck Institute, Leipzig),
  "On semigroups of nonexpansive mappings in Hadamard spaces".

14h30 - 15h15 : I. Ciotir (Université de Neuchâtel),
  "Stochastic partial differential equations motivated by physical examples".

Pause café

16h - 16h45 : F. Lemeux (Université de Franche-Comté),
  "Résultats de stabilité de la propriété de Haagerup pour les algèbres d'opérateurs des produits en couronnes libres de groupes quantiques".

17h - 17h45 : T. Pillon (Université de Neuchâtel),
  "Irreducible affine isometric actions".

20h : Dîner de la conférence.

Programme du Mercredi 14 mai (salle 309B).

9h45 - 10h30 : S. Raum (ENS Lyon),
  "Structure theory for subalgebras of type III von Neumann algebra".

Pause café

11h15 - 12h : F. Baudier (Texas A.M. University et Université Paris 6),
  "Plongements non linéaires entre espace métriques : aspect quantitatif".

Déjeuner.

13h30 - 14h15 : L. Ciobanu (Université de Neuchâtel),
  "Artin groups and rapid decay".

14h30 - 15h15 : Y. Kuznetsova (Université de Franche-Comté),
  "A non-measurable approach to the duality of quantum groups".

Pause café.

16h - 16h45 : A. Khukhro (Université de Neuchâtel),
  "Box spaces and coarse geometry".

Résumés des exposés.

Miroslav Bacak (Max Planck Institute, Leipzig)
"On semigroups of nonexpansive mappings in Hadamard spaces".

We will survey the theory of gradient flow semigroups in Hadamard spaces including the construction, regularity, asymptotic behavior and product formula. We will also discuss another class of semigroups, which are generated by nonexpansive mappings and can be used to define heat flows.

Iona Ciotir (Université de Neuchâtel)
"Stochastic partial differential equations motivated by physical examples".

We discuss existence and uniqueness of the solution for two cases of stochastic diffusion equations with multiplicative noise. More precisely we are interested in the porous media equations modeling the phenomena of saturation and the one of super fast diffusion equation or diffusion of plasma. The results are proved by using mostly monotonicity techniques and the multiplicative noise is essential for the proof.

F. Lemeux (Université de Franche-Comté)
"Résultats de stabilité de la propriété de Haagerup pour les algèbres d'opérateurs des produits en couronnes libres de groupes quantiques".

Après avoir rappelé quelques notions sur les groupes quantiques compacts, je donnerai la définition de l'équivalence monoïdale d'après Bichon, De Rijdt et Vaes. Je rappellerai alors les propriétés que l'équivalence monoïdale de groupes quantiques compacts préserve. Je donnerai enfin quelques éléments de preuve de l'équivalence monoïdale de certains produits en couronnes libres avec des groupes quantiques compacts plus simples à étudier du point de vue des propriétés d'algèbre d'opérateurs, notamment la propriété de Haagerup.

Thibault Pillon (Université de Neuchâtel)
"Irreducible affine isometric actions"

In a joint work with A. Valette and B. Bekka we introduce and study a notion of irreducibility for affine isometric action on Hilbert spaces. Although rethorical at first, the study of such actions led to interesting results about L^2 Betti numbers.

Sven Raum (ENS Lyon)
"Structure theory for subalgebras of type III von Neumann algebra"

The goal of this talk is to introduce, motivate and present recent work on structure theory for certain type III von Neumann algebras. We start by an introduction to von Neumann algebras and their classification into types. Then we summarise work of several authors on structure theory of von Neumann algebras, which mainly focused on so called type II_1 factors. Finally we present recent joint work with Cyril Houdayer on the structure of certain type III factors, including the prominent example of free Araki-Woods factors.

F. Baudier (Texas A.M. University et Université Paris 6)
"Plongements non linéaires entre espace métriques : aspect quantitatif"

Dans cet exposé nous discuterons différentes façons de quantifier la qualité de divers plongements non linéaires. Certains paramètres numériques associés à un espace métrique ainsi que leurs applications seront présents.

Laura Ciobanu (Université de Neuchâtel)
"Artin groups and rapid decay"

In this talk I will show how analyzing and counting decompositions of geodesics in various classes of groups can be used to prove that they possess the rapid decay (RD) property. The first result that I will present is that rapid decay is preserved by finite graph products. The second is that many Artin groups of large type satisfy the rapid decay property, including all of extra-large type. For many of these Artin groups a result of Lafforgue applies to show that the groups satisfy the Baum-Connes conjecture. This is joint work with Derek Holt and Sarah Rees.

Yulia Kuznetsova (Université de Franche-Comté)
"A non-measurable approach to the duality of quantum groups"

The initial motivation for this work was to find a way to calculate the dual of a quantum group without knowing its Haar weight (its 'quantum Haar measure'). It is indeed possible, and was done for the Kac algebras already in 70s by E. Kirchberg. The interest lies however in the fact that one can apply this method to bialgebras which a priori have no Haar weight. This is in fact a way of constructing new 'quasi-quantum' groups, which have certain good properties even if the initial bialgebras were very far from having a quantum group structure.

A. Khukhro (Université de Neuchâtel)
"Box spaces and coarse geometry"

I will begin by giving an overview of some questions in coarse geometry. I will then introduce a class of metric spaces arising from certain finitely generated groups in a natural way. I will show how connections between group-theoretic notions and the geometry of these spaces can be exploited in order to provide examples of metric spaces with interesting properties, which helps answer existing questions and leads to new problems.