

Journées SL2R à Reims 2018

Report of Contributions

Contribution ID: 2

Type: **Exposé**

Poisson transforms adapted to BGG-complexes

Thursday, October 18, 2018 3:00 PM (50 minutes)

Let G be a semisimple Lie group with finite centre, K a maximal compact subgroup and P a parabolic subgroup of G . We present a new construction of Poisson transforms between vector bundle valued differential forms on the homogeneous parabolic geometry G/P and its corresponding Riemannian symmetric space G/K which is tailored to the exterior calculus and can be fully described by invariant elements in finite dimensional representations of reductive Lie groups. Furthermore, we show how these transforms are compatible with several invariant differential operators, which induce a strong connection between Bernstein-Gelfand-Gelfand complexes on G/P and twisted deRham complexes on G/K . Finally, we consider the special case of the real hyperbolic space and its conformal boundary and discuss Poisson transforms of differential forms with values in the bundle associated to the standard representation $\mathbb{R}^{n+1,1}$ of $G = SO(n+1, 1)_0$.

Presenter: HARRACH, Christoph (University of Vienna (Austria))

Contribution ID: 3

Type: **Exposé**

K-theory of group C^* -algebras and the BGG complex

Thursday, October 18, 2018 4:30 PM (50 minutes)

The Baum-Connes conjecture on the K-theory of group C^* -algebras is a difficult open problem since the beginning of the 1980's. In the last 30 years a programme has been developed to prove the Baum-Connes conjecture with coefficients for semi-simple Lie groups. The tools involved are: the flag manifolds, the BGG complex, and L2 cohomology of symmetric spaces.

Presenter: JULG, Pierre (Université d'Orléans)

Contribution ID: 4

Type: **Exposé**

A class of locally compact quantum groups arising from Kohn-Nirenberg quantization

Thursday, October 18, 2018 5:30 PM (50 minutes)

Locally compact quantum group (LCQG) in the setting of von Neumann algebras (aka Kustermans-Vaes quantum groups), is believed to give the correct notion of symmetries of quantum spaces (in the setting of operator algebras). While this theory is fast growing, there are very few examples of (non-compact) LCQG.

In this talk, I will explain how the good old Kohn-Nirenberg quantization allows to construct a new class of LCQG (and also why the very good old Weyl quantization doesn't work here).

This is a joint work (in progress) with Pierre Bieliavsky, Lars Tuset and Sergiy Neshveyev.

Presenter: GAYRAL, Victor (Université de Reims Champagne-Ardenne)

Contribution ID: 5

Type: **Exposé**

Does "ax + b" stand for the solvable analogue of $SL_2(\mathbb{R})$ in deformation theory ?

Friday, October 19, 2018 9:00 AM (50 minutes)

Let G be a Lie group, H a closed subgroup of G and Γ a discontinuous subgroup for the homogeneous space $X = G/H$, which means that Γ is a discrete subgroup of G acting properly discontinuously and fixed point freely on X . For any deformation of Γ , the deformed discrete subgroup may fail to act discontinuously on X , except for the case when H is compact.

The subject of the talk is to emphasize this specific issue and to deal with some questions related to the geometry of the related parameter and deformation spaces, namely the local rigidity conjecture in the nilpotent setting. When G is semi-simple, the analogue of the Selberg-Weil-Kobayashi rigidity theorem in the non-Riemannian setting is recorded, especially the role of the group $SL_2(\mathbb{R})$ as a fake twin of the solvable "ax + b" is also discussed.

Presenter: BAKLOUTI, Ali (Université de Sfax (Tunisie))

Contribution ID: 6

Type: **Exposé**

Reduction of symplectic symmetric spaces and étale affine representations

Friday, October 19, 2018 10:30 AM (50 minutes)

We introduce a notion of symplectic reduction for symplectic symmetric spaces as a means to the study of their structure theory. We show that any such space can be written as a direct product of a semisimple and a completely symplectically reducible one. Underlying symplectic reduction is a notion of so-called pre-Lie triple system. We will explain how these are related to étale affine representations of Lie triple systems, how any symplectic symmetric space and any Jordan triple system yield such a structure, and how they allow to build new from old (symplectic) symmetric spaces.

Presenter: VOGLAIRE, Yannick (Université du Luxembourg)

Contribution ID: 7

Type: **Exposé**

Asymptotics of characters and associated cycles of Harish-Chandra modules

Friday, October 19, 2018 11:30 AM (50 minutes)

Abstract: We describe a translation principle for the Dirac index of virtual (\mathfrak{g}, K) -modules. To each coherent family of such modules we attach a polynomial, on the dual of the compact Cartan subalgebra, which expresses the dependence of the leading term in the Taylor expansion of the character of the modules. Finally we will explain how this polynomial is related to the multiplicities of the associated cycle of certain Harish-Chandra modules. These results are joint with P. Pandžić, D. Vogan and R. Zierau.

Presenter: MEHDI, Salah (Université de Lorraine (Metz))

Contribution ID: 8

Type: **Exposé**

Conformally covariant bi-differential operators for differential forms

Thursday, October 18, 2018 2:00 PM (50 minutes)

The classical Rankin-Cohen brackets are bi-differential operators from $C^\infty(\mathbb{R}) \times C^\infty(\mathbb{R})$ into $C^\infty(\mathbb{R})$. They are covariant for the diagonal action of $SL(2, \mathbb{R})$ through principal series representations. We construct generalizations of these operators, replacing \mathbb{R} by \mathbb{R}^n , the group $SL(2, \mathbb{R})$ by the group $SO_0(1, n + 1)$ viewed as the conformal group of \mathbb{R}^n , and functions by differential forms.

Presenter: KOUFANY, Khalid (Université de Lorraine - Nancy)