

Schedule

Thursday December 5, 2019 (Room MSA 3.350, Campus Belval)

- 13:00 Registration
- 13:45–14:45 **Ines Kath**
Spectra of compact quotients of the oscillator group
- 14:45–15:45 **Salah Mehdi**
Representation theoretic spectrum of locally symmetric spaces
- 15:45–16:15 Coffee break
- 16:15–17:15 **Rupert Yu**
On invariant semisimple CR structures on compact Lie groups
- 17:15–18:15 **Sourav Ghosh**
Moduli space of affine Anosov representations
- 19:30 Conference dinner at restaurant Postkutsch
8 rue Xavier Brasseur, L-4040 Esch-sur-Alzette

Friday December 6, 2019 (Room MSA 3.350, Campus Belval)

- 09:00–10:00 **Bernhard Krötz**
Discrete series for real spherical spaces
- 10:00–10:30 Coffee break
- 10:30–11:30 **Wolfgang Bertram**
Associative geometries: the arithmetic case
- 11:30–12:30 **Erik van den Ban**
Fourier inversion for Whittaker functions on a real reductive group
- 12:45 Lunch at University Mensa 'Food House'

Wifi access

Wifi network: CitedesSciences
Password: CSBelval2019-20

Abstracts

- **Erik van den Ban** (Universiteit Utrecht):

Fourier inversion for Whittaker functions on a real reductive group

A Whittaker function on a real reductive group G is a smooth function on G that transforms from the right according to a (regular) unitary character of a maximal unipotent subgroup. I will describe two new results in the harmonic analysis of these functions which are closely related to the Whittaker-Plancherel theorem. The first is a Fourier inversion theorem. The second is a closely related Paley-Wiener theorem.

- **Wolfgang Bertram** (Université de Lorraine - Nancy):

Associative geometries: the arithmetic case

Associative geometries have been designed to be, for associative algebras, what Lie groups are for Lie algebras (cf. B.-Kinyon, arxiv). The construction applies to an even greater variety of cases, among them the arithmetic case, i.e., the lattice of integers with operations lcm (lowest common multiple) and gcd (greatest common divisor). To our surprise, this case gives rise to a purely lattice theoretic formula describing the whole construction. We will explain this formula and its proof, along with examples (producing large families of semigroups of integers), and discuss some further questions.

- **Sourav Ghosh** (Université du Luxembourg):

Moduli space of affine Anosov representations

In this talk I will define affine Anosov representations and explain their relation to proper affine actions of a word hyperbolic group. Moreover, I will explain certain recent results about the geometry of the moduli space of such objects.

- **Ines Kath** (Universität Greifswald):

Spectra of compact quotients of the oscillator group

We consider the oscillator group \mathcal{O} , which is a semi-direct product of the three-dimensional Heisenberg group and the real line. We classify the lattices of \mathcal{O} up to inner automorphisms of \mathcal{O} . For every lattice L in \mathcal{O} , we compute

the decomposition of the right regular representation of \mathcal{O} on $L^2(L \backslash \mathcal{O})$ into irreducible unitary representations. This is joint work with Mathias Fischer.

- **Bernhard Krötz** (Universität Paderborn):

Discrete series for real spherical spaces

no one

- **Salah Mehdi** (Université de Lorraine - Metz):

Representation theoretic spectrum of locally symmetric spaces

We consider locally symmetric spaces $\Gamma \backslash G/H$ where G/H is a semisimple symmetric space and Γ is a discrete subgroup of G . It is a fact that the algebra $D(G/H)$ of G -invariant differential operators on G/H is commutative. I will discuss some features of the joint spectrum of $D(G/H)$ acting, as unbounded operators, on the Hilbert space $L^2(\Gamma \backslash G/H)$ of square integrable complex functions on $\Gamma \backslash G/H$. Though the group G does not act on $L^2(\Gamma \backslash G/H)$, I will explain how representations of G enter into its spectral decomposition. As a byproduct, and if time allows, I will present a result on the admissibility of G -representations with respect to non-compact subgroups. These results are joint with Martin Olbrich.

- **Rupert Yu** (Université de Reims):

On invariant semisimple CR structures on compact Lie groups

Let G_0 be a compact Lie group and \mathfrak{g}_0 its Lie algebra. An invariant CR structure on G_0 is a subbundle U of the complexified tangent bundle such that $[U, U] \subset U$, $U \cap \bar{U} = 0$ and U is stable under translation by G . Such structures are determined by its fibre at the identity element of G which is a complex Lie subalgebra \mathfrak{h} of the complexification of \mathfrak{g}_0 verifying $\mathfrak{h} \cap \mathfrak{g}_0 = \{0\}$. This allows us to study these structures in a purely Lie algebra setting. In this talk, we shall present some results on such structures of maximal rank, in particular, those whose fibre at the identity element is a semisimple Lie algebra.

This is a joint work in progress with Hella Ounaies-Khalgui.