Journées SL_2R

Institut Élie Cartan de Lorraine (UMR CNRS 7502)
Université de Lorraine

November 5–6, 2026

Conferences:
Petit Amphi, Bâtiment de l'UFR MIM, Université de Lorraine
3 rue Augustin Fresnel, 57070 Metz

Program

Thursday, November 5

10:00–10:15	*Opening of the workshop*
10:15-11:10	Toshiyuki KOBAYASHI: *Stability Regions of Branching Multiplicities*
11:15–12:10	Anne-Marie AUBERT: *Wavefront sets of representations of* $\mathfrak{p}$*-adic groups and Langlands parameters*
12:15–14:10	*Lunch buffet at the IECL*
14:15–15:10	Sophie MORIER-GENOUD: *Markov theory and q-deformation of numbers*
15:15–16:10	Jean-Marc SCHLENKER: *The bending lamination conjecture for hyperbolic 3-manifolds*
16:15–16:45	*Coffee break*
16:45–17:45	Robert YUNCKEN: General public talk: *Variations harmoniques*
19:30	*Dinner: Restaurant la Fleure de Ly, 5 rue des Piques, 57000 Metz.* *Phone: (+33) 03 87 74 01 23*

Friday, November 6

9:00–9:55	Olivier GUICHARD: *Topological properties of spaces of (decorated) representations*
10:00-10:30	*Coffee break*
10:30–11:20	Wee Teck GAN: *The strong Artin conjecture for projectively solvable 3-dimensional Galois representations*
11:30-12:25	Monica NEVINS: *Representations of SL(2,R) and the behaviour of representations of SL(2,F) near the identity*

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Titles and abstracts of the talks:

Anne-Marie AUBERT:

Wavefront sets of representations of p-adic groups and Langlands parameters

Abstract: We will introduce two important invariants of complex irreducible smooth representation of a p-adic reductive group G: the wavefront set and the (partly conjectural) Langlands parameter. While the wavefront set consists of p-adic unipotent orbits, one constituent of the Langlands parameter is a unipotent orbit in the dual complex Lie group of G.
Next, we will focus on "depth-zero" representations of G, which are the ones which correspond to tamely ramified Langlands parameters. We will describe a reduction procedure from depth-zero to unipotent representations, and an upper bound for their wavefront sets in term of the unipotent orbits given by their Langlands parameters.

Wee Teck GAN:

The strong Artin conjecture for projectively solvable 3-dimensional Galois representations

Abstract: I will discuss recent works of myself and Junwu Wang (an undergraduate student at NUS) which collectively demonstrate the modularity of Galois representations into $\mathrm{GL}(3,\mathbb{C})$ with solvable projective image.
For the case of 2-dimensional Galois representations, the analogous results were due to Langlands and Tunnell (resolving the tetrahedral. and octahedral case respectively).

Olivier GUICHARD:

Topological properties of spaces of (decorated) representations

Abstract: Moduli spaces of decorated representations of a cusped surface group are analogues for general Lie groups of the celebrate Penner's decorated Teichmüller space. We will describe the topological properties of these spaces, particularly under the hypothesis where the Lie group admits a so-called positivity structure with respect to one of its flag variety and the relation with the non decorated spaces. Along the way we will investigate fixed point properties in flag varieties. This is joint work with Eugen Rogozinnikov and Anna Wienhard.

Toshiyuki KOBAYASHI:

Stability Regions of Branching Multiplicities

Abstract: In this talk, we discuss a conceptual perspective on when and how branching multiplicities change in restrictions of representations. We develop a framework for the stability of branching multiplicities arising in the restriction of finite- and infinite-dimensional representations of real reductive Lie groups.
Focusing on pairs whose complexifications are of type $(\mathfrak{gl}(n+1),\mathfrak{gl}(n))$ and $(\mathfrak{o}(n+1),\mathfrak{o}(n))$, we show that branching multiplicities are locally constant on explicitly described convex regions in the joint parameter space of infinitesimal characters, and can change only upon crossing certain hyperplanes ("fences").
To illustrate the structure concretely, we describe these regions explicitly in the case of tensor products for $\mathrm{SL}(2,\mathbb{R})$ and discuss the parameter dependence of the blow-up of branching multiplicities in relation to the parameter dependence of Jacobi polynomials.

Sophie MORIER-GENOUD:
Markov theory and q-deformation of numbers

Abstract:
In collaboration with Valentin Ovsienko we recently introduced a notion of q-deformed rational and irrational numbers, that extend the standard notion of q-integers. Our approach is based on simple combinatorial properties of numbers and continued fractions. These q-reals exhibit numerous properties connected to a variety of subjects, including the combinatorics of posets, invariants of knots and braids, homological algebra, hyperbolic geometry ... I will recall the construction and main properties of the q-reals, and we will revisit Markov's approximation theory through the lens of the q-deformations.

Monica NEVINS:
Representations of $\mathrm{SL}(2,R)$ *and the behaviour of representations of* $\mathrm{SL}(2,F)$ *near the identity*

Abstract:
Let F be a nonarchimedean local field. The restriction of an irreducible representation π of $\mathrm{SL}(2,F)$ to the maximal compact open subgroup $\mathrm{SL}(2,R)$ gives an explicit description of the local nature of π, that is, of its behaviour near the identity. For example, when $p \neq 2$, this gives a representation-theoretic version of the local character expansion; we report on recent results with Tiwari. When $p = 2$, the local character expansion may not exist, and in work with Karaganis on the branching to $\mathrm{SL}(2,R)$ of depth-zero supercuspidal representations when $p = 2$, we propose two representation-theoretic replacements.

Jean-Marc SCHLENKER:
The bending lamination conjecture for hyperbolic 3-manifolds

Abstract:
Convex co-compact hyperbolic manifolds contain a smallest non-empty geodesically convex subset, called their convex core. The "pleating" of the boundary of this convex core is recorded by a measured lamination, called the bending lamination, and Thurston conjectured that convex co-compact hyperbolic 3-manifolds are uniquely determined by their bending lamination. We will describe a proof of this conjecture (joint with Bruno Dular) and then mention newer results by Bruno Dular alone. If time allows we will provide contexts on a more general point of view on those problems.

GENERAL PUBLIC TALK

Robert YUNCKEN:
Variations harmoniques

Abstract: Si on souffle dans un trombone et qu'on fait glisser la coulisse, alors les fréquences produites changent. Que se passe-t-il si on pousse la coulisse à l'infini ?
Dans cet exposé on parlera de l'analyse harmonique sur les familles de groupes en déformation. Il y a de nombreux exemples de ce phénomène, et nous en explorerons quelques-uns. Nous présenterons notamment une observation profonde de Mackey sur la déformation des groupes semi-simples, comme $\mathrm{SL}(n,\mathbb{R})$, en groupes plus élémentaires. Étonnamment, les travaux d'Afoustidis et d'autres montrent que l'analyse harmonique ne changent presque pas, malgré le changement brutal des groupes.

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