SÉANCE XXXI: REPRESENTATION THEORY OF REDUCTIVE GROUP

King's College London

Lundi 16 Mai

11:00–11:30: WELCOME! THE COFFEE IS SERVED!

11:30–12:30 : Jessica Fintzen (Cambridge University)
Representations of p-adic groups – with a twist
A fundamental problem in the representation theory of p-adic groups is the construction of the buildings blocks of all (irreducible, smooth, complex or mod-ℓ) representations of p-adic groups: the (super)cuspidal representations. I will provide an overview of our current understanding of the construction of these supercuspidal representations focusing on recent developments including joint work with Kaletha and Spice on a twist of Yu's construction of supercuspidal representations by a quadratic character. This twist is crucial for applications towards character formulae and an explicit local Langlands correspondence.

12:30–14:00: LUNCH

14:00–15:00 : Rob Kurinczuk (University of Sheffield)
Representations of p-adic groups and moduli of Langlands parameters over $\mathbb{Z}[1/p]$
In recent joint work with Dat, Helm, and Moss, we constructed moduli spaces of Langlands parameters over $\mathbb{Z}[1/p]$ and studied their geometry. We expect this geometry is reflected in the representation theory of the p-adic group. Our main conjecture "local Langlands in families" describes the GIT quotient of the moduli space of Langlands parameters in terms of the endomorphisms of a Gelfand–Graev representation generalising a theorem of Helm-Moss for $GL(n)$. I will explain the relation of this conjecture to recent work and how after inverting all "non-banal" primes we can prove it for classical groups.

15:00–16:00 : Thomas Lanard (CNRS)
Depth zero representations over $\overline{\mathbb{Z}}[\frac{1}{p}]$
In this talk, I will talk about the category of depth zero representations of a p-adic group with coefficients in $\overline{\mathbb{Z}}[\frac{1}{p}]$. When the group $\mathbf{G}$ is quasi-split and tamely ramified, the depth zero category over $\overline{\mathbb{Z}}[\frac{1}{p}]$ is indecomposable. In general, for a quasi-split group, we will see that the blocks (indecomposable summands) of this category are in natural bijection with the connected components of the space of tamely ramified Langlands parameters. In the last part, I will explain some potential applications to the Fargues–Scholze and Genestier–Lafforgue semisimple local Langlands correspondences. This is joint work with Jean–François Dat.

16:00–16:30: COFFEE!

16:30–17:30 : Arthur–César Le Bras (CNRS–LAGA)
A Fourier transform for Banach–Colmez spaces
I will explain how to define an ℓ-adic Fourier transform for Banach–Colmez spaces and discuss some examples. This is a joint work with Anschütz, which was motivated by the study of Fargues' geometrization conjecture for GL_n.

Mardi 17 Mai

10.00–11.00 : Simon Riche (Université Clermont Auvergne)
Modular perverse sheaves on affine flag varieties and geometry (and representation theory) of the Langlands dual group
I will report on a joint project with Roman Bezrukavnikov (and partly with Laura Rider) which aims at constructing an equivalence of categories relating constructible sheaves on an affine flag variety, with coefficients in a field of positive characteristic, and coherent sheaves on the Steinberg variety of the Langlands dual group. We expect applications of this equivalence in the Geometric Langlands Program and in Modular Representation Theory. I will try to explain what has already been obtained, and what we expect to do next.

11:00–11:30 : Caffè !

11:30–12:30: Beth Romano (King's College London)
Fourier transform for unipotent representations of p-adic groups
Representations of finite reductive groups have a rich, well-understood structure, first explored by Deligne–Lusztig. In joint work with Anne-Marie Aubert and Dan Ciubotaru, we show a way to lift some of this structure to representations of p-adic groups. In particular, we work with unipotent representations of split p-adic groups and their inner twists. We consider the relation between Lusztig's nonabelian Fourier transform and a certain involution we define on the level of p-adic groups. This talk will be an introduction to these ideas with a focus on examples.