



FORMES AUTOMORPHES p -ADIQUES ET PARAMÈTRES : ASPECTS LOCAUX ET GLOBAUX

LUNDI 23 JUIN 2025

SALLE A2. 201, UNIVERSITÉ DE PARIS 8

9.30–10.00 : *Caffè ! (Maison de la Recherche)*

10.00–11.00 : *Patrick Allen (Mc Gill University et Laboratoire de Mathématiques d'Orsay)*

Modular orbifolds and derived Galois deformation theory

An example of Serre shows that in the strong form of his modularity conjecture, one can't always ask for minimal nebentypus. Serre and Carayol independently explained that this obstruction is due to nontrivial isotropy groups on certain modular orbifolds, hence only occurs for the primes 2 and 3 and certain Galois representations called badly dihedral.

Curiously, when studying the deformation theory of a mod p modular Galois representation for an odd prime p , the same badly dihedral representations for $p = 3$ arise: it is exactly for these that the minimal deformation ring does not appear to be a flat local complete intersections over the ring of Witt vectors.

We explain this link via a derived version of a minimal $R = T$ theorem. As a corollary, we can characterize when these badly dihedral representations admit lifts with minimal weight, level, and nebentypus. This is joint work in progress with Preston Wake.

11.15–12.15 : *Bao Viet Le Hung (Northwestern University)*

Potential diagonalizability of weight 0 representations in dimension 3.

TBA

12.15–13.30 : *Déjeuneur (Maison de la Recherche)*

13.30–14.30 : *Youshua Kesting (Université Paris VIII)*

Drinfelds lemma as a categorical Künneth formula

One step to construct the spectral action in the Fargues–Scholze geometrisation program consist in establishing the so-called Drinfeld lemma. The latter can be stated as the existence of a categorical Künneth formula for the category of ℓ -adic sheaves on a certain v -stack. However, a p -adic categorical conjecture along the lines of Fargues–Scholze remains mysterious. Motivated to extend the Drinfeld-lemma from ℓ -adic to p -adic coefficients we investigate categorical Künneth formulas for general 6-functor formalisms. Our results imply that categorical Künneth formulas hold for any ℓ -able analytic stack X with affine diagonal for the 6-functor formalism of quasi-coherent sheaves on analytic stacks in the sense of Clausen–Scholze.

14.45–15.45 : *Kartik Prasanna (University of Michigan)*

Representations of GL_2 over $\mathbb{Z}/p^n\mathbb{Z}$ and binomial congruences

Let $R = \mathbb{Z}/p^n\mathbb{Z}$. The representation theory of $GL_2(R)$ over R -modules is well studied for $n = 1$ but there is not much known for $n > 1$. I will describe a single result in the $R = \mathbb{Z}/p^n\mathbb{Z}$ case which suggests there is perhaps an interesting general theory to be discovered. I will also explain the motivation for considering this problem, which came from our attempt to solve a certain p -adic differential equation.

This is joint work with Atsushi Ichino.

16.00–17.00 : Zicheng Qian (Chinese Academy of Sciences)

Higher Ext between locally analytic generalized Steinberg

The definition/study of L invariants via locally analytic representation theory has been initiated by Breuil in the case of $GL(2, \mathbb{Q}_p)$. Recently, the $GL(3, \mathbb{Q}_p)$ case has been studied extensively by Schraen and Breuil–Ding from different aspects.

Motivated by their work and Gehrman’s work on automorphic L invariants, it is important to understand Ext groups such as $Ext_G^{n-1}(1_G, St_G^{an})$ (*) with $G = PGL(n, K)$, as well as its Lie algebra version. The space (*) can be computed using the Tits complex which is a resolution of St_G^{an} by the parabolic induction of the trivial representation of standard Levi subgroups. Consequently, it admits canonical subspaces defined using either relative conditions or the layer structure of St_G^{an} (or equivalently maps between Tits complex with different highest weights). Note that the Lie algebra version of (*) admits a third structure using results in Koszul’s thesis.

We study the relation between these three (different) structures. As an application, we generalize several results in Schraen’s thesis to $G = PGL(n, K)$.

Les journées arithmétiques du LAGA sont organisées par F. Mokrane, S. Morra, M. Tamiozzo et sont soutenues par le LAGA, l’ANR COLOSS, l’Institut Universitaire de France et l’Université de Paris 8