

Journées Arithmétiques à l'ENS Lyon

ANR PerCoLaTor

Programme

10 au 12 Juin 2015

Lieu : UMPA, ENS de Lyon (site Sciences) 46, allée d'Italie, Lyon.

Salle : Le mercredi en Amphi B. Les jeudi et vendredi en Amphi A.

Accueil : Mercredi 10 Juin, 11:00 - 11:29.

	Mercredi 10 Juin	Jeudi 11 Juin	Vendredi 12 Juin
9:00 - 10:00		Ardakov	Lan
10:30 - 11:30		Le Bras	Niziol
11:45 - 12:45	Fargues*	Brasca	Hida
14:00 - 15:00	Hernandez	Berger	
15:15 - 16:15	Caraiani	Hellmann	
16:30 - 17:30	Bijakowski	Poincaré**	

* Cet exposé commence à 11h 30.

**Ce film commence à 17h 00.

Déjeuner : Le mercredi un buffet est proposé en salle passerelle. Le jeudi et le vendredi le déjeuner est proposé à la cafétéria de l'ENS qui se situe au rez-de-chaussé du bâtiment.

Projection d'un film : Le jeudi à 17h, nous vous proposons d'assister à la projection du film de Philippe Worms "*Poincaré, l'harmonie et le chaos*" à la Maison des Mathématiques et de l'Informatique qui se trouve en face du bâtiment. La projection sera suivie d'une discussion avec le réalisateur et d'un cocktail.

Konstantin Ardakov (Oxford University) : Preservation of holonomicity for $\widehat{\mathcal{D}}$ -modules

Let G be a semisimple p -adic Lie group. G -equivariant coadmissible $\widehat{\mathcal{D}}$ modules on the rigid analytic flag variety are anti-equivalent to admissible locally analytic representations of G with trivial infinitesimal central character. In the classical setting of coherent \mathcal{D} -modules on smooth algebraic varieties, holonomic \mathcal{D} -modules are known to be preserved under arbitrary pushforwards and pullbacks. I will discuss work in progress with Simon Wadsley towards an analogue of this result for coadmissible $\widehat{\mathcal{D}}$ modules.

Laurent Berger (ENS Lyon) : Iterated extensions and relative Lubin-Tate groups

The talk is motivated by the following question: for which Galois groups Γ do we have a theory of (φ, Γ) -modules? I will discuss some results related to this question. They involve p -adic dynamical systems, Coleman power series and relative Lubin-Tate groups.

Stéphane Bijakowski (Université Pierre et Marie Curie) : Unitary Shimura varieties and overconvergent modular forms

In this talk, I will study Shimura varieties associated to an unitary group at p . I will introduce the μ -ordinary locus, the canonical subgroups and the Hecke operators. I will try to point out the differences with the linear case. Finally, I will define the overconvergent modular forms of integral weight, and prove a classicality result.

Riccardo Brasca (Université Pierre et Marie Curie) : Eigenvarieties for non-cuspidal Siegel modular forms

In a recent work Andreatta, Iovita, and Pilloni constructed the eigenvariety for cuspidal Siegel modular forms. This eigenvariety has the expected dimension, namely the genus of the Siegel variety, but it parametrizes only cuspidal forms. We explain how to generalize the construction to the non-cuspidal case. To be precise, we introduce the notion of "degree of cuspidability" and we construct an eigenvariety that parametrizes forms of a given degree of cuspidability. The dimension of these eigenvarieties depends on the

degree of cuspidability we want to consider: the more non-cuspidal the forms, the smaller the dimension. This is a joint work with Giovanni Rosso.

Ana Caraiani (Princeton University) : On the vanishing of torsion in the cohomology of Shimura varieties

I will talk about work in progress with Peter Scholze, the goal of which is to understand in what degrees torsion can occur in the cohomology of Shimura varieties. I will discuss the Hodge-Tate period map, the stratification of the period domain and the relationship between Shimura varieties and Rapoport-Zink spaces at infinite level.

Laurent Fargues (CNRS, Université Pierre et Marie Curie): Du corps de classe local à la courbe et vice versa

Je parlerai de résultats contenus dans mon article " G -torseurs en théorie de Hodge p -adique" reliés à la théorie du corps de classe local. J'expliquerai en particulier le calcul du groupe de Brauer de la courbe et pourquoi sa classe fondamentale est celle de la théorie du corps de classe local.

Eugen Hellmann (Bonn Universität): Degenerate triangulations and classicality of some p -adic automorphic forms

We describe the geometry the space parametrizing trianguline representations of a local Galois group at certain points where the triangulation degenerates. It turns out that the geometry of this space carries information about classicality of p -adic automorphic forms that arise on eigenvarieties for definite unitary groups. This is joint work with Christophe Breuil and Benjamin Schraen.

Valentin Hernandez (Université Pierre et Marie Curie) : Hasse invariants and canonical filtration when the ordinary locus is empty

The canonical subgroup was constructed in full generality by Fargues for PEL Shimura varieties with a non-empty ordinary locus. We will try to explain how we can generalise his construction in the case when the ordinary locus is empty, in which case we will use the Hasse invariants constructed by Goldring-Nicole.

Haruzo Hida (UCLA) : Analytic variation of Tate-Shafarevich groups

Analyzing known elementary relations between $U(p)$ -operators and Picard functoriality of the Jacobians of each tower of modular curves of p -power level, we get fairly exact control of the ordinary part of the limit Barsotti-Tate groups and the (p -adically completed) ind-limit Mordell-Weil groups with respect to the weight Iwasawa algebra. Computing

Galois cohomology of these controlled Galois modules, we obtain good control of the (ordinary part of) limit Selmer groups and limit Tate-Shafarevich groups.

Kai-Wen Lan (University of Minnesota) : Compactifications of splitting models of PEL-type Shimura varieties

I will report on some constructions of toroidal and minimal compactifications, with expected properties concerning stratifications and formal local structures, for integral models of PEL-type Shimura varieties defined by taking normalizations over the splitting models considered by Pappas and Rapoport.

Arthur-César Le Bras (Université Pierre et Marie Curie) : Drinfeld's coverings and the p -adic Langlands correspondence

Some time ago, Christophe Breuil and Matthias Strauch formulated a conjecture giving an elegant description of the locally analytic vectors in the Banach representations of $\mathrm{GL}_2(\mathbf{Q}_p)$ attached by the p -adic Langlands correspondence to 2-dimensional de Rham non trianguline Galois representations, using the coverings Σ_n of the p -adic upper half plane Σ_0 defined by Drinfeld. I will state a complete description of the space $\mathcal{O}(\Sigma_n)$ of functions on the n th-cover as a $\mathrm{GL}_2(\mathbf{Q}_p) \times D^*$ -representation (where D is the unique non split quaternion algebra over \mathbf{Q}_p), which uses both (classical) Jacquet-Langlands and p -adic Langlands, and give an overview of the proof of this result. This is joint work with Gabriel Dospinescu.

Wiesława Nizioł (ENS Lyon) : Syntomic complexes and p -adic nearby cycles

For a semistable scheme over a mixed characteristic local ring we prove a comparison isomorphism, up to some universal constants, between truncated sheaves of p -adic nearby cycles and syntomic cohomology sheaves. This generalizes the results of Kato, Kurihara, and Tsuji from small Tate twists to all twists. As an application, we combine this local comparison isomorphism with the theory of finite dimensional Banach Spaces to prove a Semistable conjecture for formal schemes with semistable reduction. This is a joint work with Pierre Colmez.