GEOMETRIZATION OF THE LOCAL LANGLANDS CORRESPONDENCE: TITLES AND ABSTRACTS

1. Mini-courses

- Johannes Anschütz and Arthur-César Le Bras

  Title: Geometric aspects of the p-adic locally analytic Langlands correspondence

  Abstract: In this series of 4 talks, we will outline how various aspects of the geometrization of the classical local Langlands correspondence by Fargues-Scholze admit meaningful analogs in the p-adic Langlands program for locally analytic representations of p-adic reductive groups. Based on the crucial notion of a thickened Fargues–Fontaine curve we will explain how to define 1) a stack Bun_G^{la} geometrizing locally analytic representations, and 2) a moduli space Div^1 of degree 1 divisors geometrizing (φ, Γ)-modules. Then we will discuss aspects of a Hecke action linking 1) and 2). This is work (very much) in progress with Juan Esteban Rodriguez Camargo, Peter Scholze, and partially Guido Bosco.

- Mingjia Zhang

  Title: Igusa stacks and applications

  Abstract: Following a conjecture of Scholze, Igusa stacks have been introduced to study the geometry and cohomology of Shimura varieties, leading to several interesting results, including a new proof of the Eichler-Shimura relations and Yang's proof of generalized Ihara's lemma. In these talks, I will explain the following two topics:
  1. the construction of Igusa stacks for abelian type Shimura varieties and applications;
  2. intersection complexes on Igusa stacks and applications to the intersection cohomology of Shimura varieties.
  These results are based on joint work in progress with Daniels-van Hoften-Kim and Caraiani-Hamann.

2. Talks

- Laurent Fargues

  Title: Propriétés de rationalité de la correspondance de Langlands locale géométrisée

  Abstract: On construit une G_m-gerbe au dessus de l'espace de modules des paramètres de Langlands locaux de telle façon que la transformée de Fourier non-abélienne motivique associée, à priori définie sur une clôture algébrique des nombres rationnels, descende rationnellement en un foncteur des complexes parfaits tordus sur la G_m-gerbe vers les faisceaux motiviques sur Bun_G via l'action spectrale motivique. La construction de cette G_m-gerbe s'adapte au champ d'Emerton-Gee. De plus on obtient au passage la conjecture de catégorification motivique pour les tores. Il s'agit d'un travail en commun avec Naoki Imai.

- David Hansen

  Title: TBA

  Abstract: TBA

- Sean Howe

  Title: TBA

  Abstract: TBA

- Naoki Imai

  Title: TBA

  Abstract: TBA

- Tasho Kaletha

  Title: TBA

  Abstract: TBA

- Si-Ying Lee

  Title: TBA

  Abstract: TBA

- Joao Lourenço

  Title: Comparison of sheaf categories on Isoc_G and Bun_G

  Abstract: In the geometrization of local Langlands for p-adic fields, 2 different categories of étale sheaves have appeared on the geometric/automorphic/constructible side in the works of Fargues–Scholze and Zhu, namely those coming from the moduli stack of G-torsors on the Fargues–Fontaine curve, and those coming from the moduli stack of G-isocrystals. They offer somewhat complementary advanteges, the first being more suited for studying Hecke operators and Eisenstein series, whereas the second is more suited for taking categorical traces. We will explain how to construct an equivalence between these categories with torsion coefficients. This is joint work with Gleason, Hamann, Ivanov and Zou.

- Lucas Mann

  Title: TBA

  Abstract: TBA

- Yutaro Mikami

  Title: The p-adic monodromy theorem for families over relatively discrete algebras

  Abstract: The analytic Emerton-Gee stack is the rigid analytic moduli stack of (φ, Γ)-modules over the Robba ring and plays a central role in the formulation of the categorical p-adic local Langlands correspondence proposed by Emerton, Gee, and Hellmann. The result of Rodrigues Jacinto and Rodríguez Camargo in the case of GL_1 suggests that, as test objects for the analytic Emerton–Gee stack, one should consider algebraic-affinoid $\mathbb{Q}_p$-algebras, which are "combinations of discrete algebras and affinoid $\mathbb{Q}_p$-algebras". Motivated by this observation, I introduce the families of (φ, Γ)-modules parametrized by algebraic-affinoid $\mathbb{Q}_p$-algebras. I then explain how the p-adic monodromy theorem for families proved by Berger and Colmez

can be generalized to this setting.

- Jared Weinstein

  Title: Excursion functions on p-adic groups

  Abstract: I present material from my student Jacksyn Bakeberg's thesis. The Bernstein center of a p-adic group is its ring of conjugation-invariant distributions; this ring controls the representations of the group. Fargues-Scholze gives a geometric construction of a subring of the Bernstein center, consisting of excursion operators, which are labeled by elements of the Galois group. One can think of these operators as an encoding of the Langlands correspondence. It would be interesting to give a completely explicit description of these excursion operators. We do exactly this in the case of $G = \mathrm{SL}_2$, where we show that the excursion operator is represented by a function (an "excursion function") on a dense open locus.

- Konrad Zou

  Title: The spectral action at bad primes

  Abstract: In seminal work of Fargues and Scholze, an action of the category $\mathrm{IndPerf}(\mathrm{LS}_{\check{G}}$ on the category of sheaves on Bun_G is constructed, pinned down by the fact that it is compatible with Hecke operators. In positive characteristic, working with $\overline{\mathbb{F}_\ell}$, we need to assume that $\ell \nmid \pi_0(Z(G))$. This result is sharp, as proven by a no-go theorem there. Thus the question arises, what additional datum other than Hecke operators might one require to go beyond $\ell \nmid \pi_0(Z(G))$? In this talk, we propose the answer to be a compatibility datum for extensions of the center. Up to a small modification of the category $\mathrm{IndPerf}(\mathrm{LS}_{\check{G}}$, we can descend spectral actions along central extensions on $\check{G}$, we may thus always assume that G has connected center. We will explain how one can construct a descent datum in the context of the Fargues-Scholze program. If time permits, we will discuss how one can show that all descent data are effective, which also applies to other situations in modular geometric representation theory.