



DIALOGUES ENTRE (VARIETÉS DE) SHIMURA ET IGUSA

Lundi 28 Avril 2024

Salle A2. 201, Université de Paris 8

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

10.00-11.00 : Rong Zhou (Cambridge University)

Tangent spaces of affine Schubert varieties

Schubert varieties in (twisted) affine Grassmannians are of interest to arithmetic geometers because they model the étale local structure of the special fiber of Shimura varieties. In this talk, I will discuss a simple proof (joint with Pappas) of a conjecture of Haines–Richarz classifying the smooth locus of Schubert varieties, generalizing a classical result of Evens–Mirkovic. The main input is to obtain a lower bound for the tangent space at a point of the Schubert variety which arises from considering certain smooth curves passing through it. In the second part of the talk, I will explain how in many cases related to Shimura varieties, we can prove this bound is actually sharp, and discuss some applications of this sharpness result. This last part is based on joint work with Kisin-Pappas

11.15-12.15 : Kieu Hieu Nguyen (Université de Versailles Saint Quentin)

Cohomology of some Shimura varieties with torsion coefficient.

Shimura varieties are important objects in the Langlands program. In this talk I will explain how one can use some techniques from the categorical local Langlands conjecture of Fargues–Scholze to study cohomology of global and local Shimura varieties with torsion coefficient.

12.15–13.30 : Déjeuneur (Maison de la Recherche)

13.30-14.30 : Jack Sempliner (Imperial College London)

A p-adic approach to exceptional hecke correspondences between Shimura varieties. Over the past few decades there has been a great deal of progress by Helm, Tian-Xiao, and finally Xiao-Zhu on the topic of exceptional Hecke correspondences between Shimura varieties in characteristic p. The most general extant formalism for constructing these correspondences is that of Xiao-Zhu, which permits one to construct exotic Hecke correspondences between quite general Shimura data (G, X) and (G', X') at a prime p provided G, G' are inner forms such that $G_{\mathbb{A}_f} \cong G'_{\mathbb{A}_f}$ and one works with hyperspecial level at p. I will explain a new approach (building on that of Xiao-Zhu) to constructing exotic Hecke correspondences purely in the world of p-adic geometry and the geometry of Igusa stacks, which allows one to relate the cohomology of different Shimura varieties in a great deal of generality and with no restrictions on the level at p. Time permitting, I will discuss how these results, in tandem with some results of Fargues-Scholze, allow one to construct certain cases of a cohomological Jacquet-Langlands correspondence between many Shimura varieties of abelian type. All results are joint with Pol van Hoften.

14.45–15.45 : Yichao Tian (Morningside Center for Mathematics)

Anticyclotomic Iwasawa Main Conjecture for Rankin-Selberg motives

Let M be the Rankin–Selberg motive arising from a pair of regular algebraic conjugate self-dual cuspidal automorphic representations of minimal weight on GL_n and GL_{n+1} over a CM number field F. Let F_{∞}/F be an anti-cyclotomic \mathbb{Z}_p^d -extension such that M is good ordinary at all p-adic primes ramified in F_{∞} . In this talk, I will explain that under some technical assumptions, the characteristic ideal of the Bloch–Kato Iwasawa Selmer module for M along F_{∞}/F contains the corresponding p-adic L-function, which is constructed previously by Yifeng Liu. A key new ingredient in the proof is an unramified level raising result on unitary Shimura varieties of type U(2r - 1, 1) with good reduction. This is a joint work with Yifeng Liu and Liang Xiao.

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