
Hausdorff School on
“The Emerton-Gee stack and related topics”

9 to 13 September 2019

organized by
Johannes Anschütz, Arthur-César Le Bras, Andreas Mihatsch

Abstracts

Sebastian Bartling (Paris 6)

Crystalline representations and Breuil-Kisin modules

Abstract: We will give a summary of the results of Kisin’s paper “Crystalline Representations and F -crystals”, which allow one to embed the category of lattices in crystalline representations into a category defined in terms of semi-linear algebra: the category of so called Breuil-Kisin modules.

Ana Caraiani (Imperial College)

Discussion Session 2

Abstract: We will discuss some examples and questions regarding the main lectures.

Matthew Emerton (University of Chicago)

Moduli stacks of (φ, Γ) -modules

Abstract: See the pdf file.

Toby Gee (Imperial College)

Moduli stacks of (φ, Γ) -modules

Abstract: See the pdf file.

Bao Le Hung (Northwestern University)

Algebraic models of Galois deformation spaces

Abstract: See the pdf file.

Axel Kölschbach (Universität Bonn)

Prismatic and Breuil-Kisin cohomology

Abstract: Using topological Hochschild homology, Bhatt-Morrow-Scholze constructed a cohomology theory for proper smooth schemes over rings of integers in p -adic fields which takes values in Breuil-Kisin modules and interpolates all known p -adic cohomology theories associated to such schemes. Following Bhatt-Scholze, we will present the construction of prismatic cohomology and explain how it provides a significantly simplified approach to the mentioned cohomology theory of Bhatt-Morrow-Scholze.

Ariane Mézard (Paris 6)

Potentially Barsotti-Tate deformation rings

Abstract: The object of this talk is to explain properties of potentially Barsotti-Tate and potentially semi-stable deformation rings and statements of related numerical and geometric conjectures describing multiplicities of components of their reduction.

Vytautas Paškūnas (Universität Duisburg-Essen)

The p -adic Langlands program and the Breuil-Mézard conjecture

Abstract: I will discuss the proof of the Breuil-Mézard conjecture for 2-dimensional representations of the Galois group of \mathbf{Q}_p and the p -adic local Langlands correspondence for $GL_2(\mathbf{Q}_p)$.

Stefano Morra (Paris 8)

Discussion Session 1

Abstract: We will discuss some examples and questions regarding the main lectures.

James Newton (King's College)

The Breuil-Mézard conjecture and automorphy

Abstract: I will discuss the relationship between the Breuil-Mézard conjecture and automorphy lifting theorems via Taylor-Wiles-Kisin patching, focusing on the ideas appearing in:

1. Gee and Kisin's proof of Breuil-Mézard in the 2-dimensional potentially Barsotti-Tate case,
 2. Kisin's proof of modularity lifting theorems using Breuil-Mézard for $GL_2(\mathbf{Q}_p)$.
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