



Seminar

September 2025

2025.9.24 (Wed)

Algebra Seminar (13:30--15:00 【Venue: Science Complex A 202】)

Speaker : Piotr Achinger (IMPAN)

Title : Tame fundamental groups of rigid spaces

Abstract :

The fundamental group of a complex variety is finitely presented. The talk will survey algebraic variants (in fact, distant corollaries) of this fact, in the context of variants of the étale fundamental group. We will then zoom in on "tame" étale fundamental groups of p -adic analytic spaces. Our main result is that it is (topologically) finitely generated (for a quasi-compact and quasi-separated rigid space over an algebraically closed field). The proof uses logarithmic geometry beyond its usual scope of finitely generated monoids to (eventually) reduce the problem to the more classical one of finite generation of tame fundamental groups of algebraic varieties over the residue field. This is joint work with Katharina Hübner, Marcin Lara, and Jakob Stix.

2025.9.25 (Thu)

Algebra Seminar (13:30--16:45 【Venue: Mathematics Building 305】)

(1) 13:30--15:00

Speaker : Alberto Merici (University of Heidelberg)

Title : Descent for logarithmic invariants and applications

Abstract :

Following a suggestion by Mathew, I will explain how to identify some arithmetic invariants of logarithmic schemes with (non-log) invariants of the associated infinity root stack of Talpo and Vistoli. A key ingredient is a form of descent for logarithmic invariants that we call "saturated descent". As an application, we deduce comparison theorems of logarithmic invariants from classical (non-logarithmic) comparisons and construct variants of Beilinson/Bloch--Esnault--Kerz fiber squares for semi-stable varieties over a local field. This is a joint work with F. Binda, T. Lundemo and D. Park.

(2) 15:15--16:45

Speaker : Ko Aoki (MPIM)

Title : Higher motives

Abstract :

I talk about my thesis work in progress. I first explain how to categorify the idea of motives of algebraic varieties. Now we parametrize six operations rather than cohomology theories, which I call "2-motives." To formulate this, we need the theory of presentable $(\infty, 2)$ -categories, which was initiated by Stefanich and has been recently advanced by me. I then explain Scholze's idea for relating this to the transmutation philosophy of Drinfeld and Bhatt--Lurie. I present my theorem precisely realizing this idea. Moreover, I describe the analytic version of this theorem, which is useful for constructing various realizations, such as the p -adic de Rham realization and the Habiro realization.

2025.9.30 (Tue)

Algebra Seminar (13:30--15:00 【Venue: Mathematics Building 209】)

Speaker : Wansu Kim (KAIST)

Title : On degeneration of D -shtukas over ramified legs

Abstract :

Let D be a central division algebra over a global function field F , and choose a parahoric integral model G of $D^\times$ over the smooth projective model of F . We obtain a sufficient condition for properness of moduli stacks of r -legged G -shtukas bounded by some Beilinson--Drinfeld Schubert variety allowing legs, allowing legs to meet the ramification locus of D . In particular, we show that the moduli stack is proper if D is "sufficiently ramified" relative to the number of legs r and the bound. Our sufficient condition is more stringent than the condition for the moduli stack to be proper over the unramified locus for G , obtained by Eike Lau. This is joint work with Yong-Gyu Choi and Junyeong Park.

