Chen Yue

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Research Interests

Number theory, Arithmetic Geometry and Representation Theory.

Education

Chinese University of Hong Kong *Sep 2023 - present*
Master of Philosophy in Mathematics

- GPA: 4.0/4.0
- **Coursework:** Riemann surfaces, Topology of Manifolds, graduate abstract algebra, two topics courses in number theory

South China University of Technology *Sep 2019 - Jun 2023*
BSc. in Mathematics and Applied Mathematics

- GPA: 3.82/4.0, ranking: 4/62
- Average grade of pure math course: 90.7

Undergraduate Thesis

Fargues-Fontaine curve, classification of vector bundles and its geometric simple connectedness(in Chinese). *June 2023*
Thesis
Supervised by Prof. Hao Sun

Research Experiences

Geometric height of flag varieties in positive characteristic (Ongoing) *See our proof*
Yue Chen, Haoyang Yuan, Under the instruction of Dr. Binggang Qu

Explicitly described the height function and height filtration on a flag varieties over a function field, without assuming the characteristic of the base field, thereby addressing all characteristics.

Presentation & Poster

An introduction to p-adic Hodge theory *Oct. 2023*
Guangzhou, South China University of Technology

On relative Fargues-Fontaine curve(informal) *May. 2024*
Hong Kong, Chinese University of Hong Kong

Geometric height of flag varieties in positive characteristic with *Poster* *August. 2024*
Beijing, Peking University

On admissible locus of p-adic period domain via Bun_G**(informal)** *Sept. 2024*
Beijing, Tsinghua University

Seminars

p-adic Hodge theory *Spet. 2023-Dec. 2023*

- Gave talks on construction of various period rings and corresponding p-adic Galois representation(Hodge-Tate, de Rham and crystalline), p-divisible groups and Dieudonne theory.
- Delivered the proof of "weakly admissable implies admissible" using the geometry of Fargues-Fontaine curve.

Student seminar on étale cohomology *Étale*

- Delivered several talk on Formalism of étale cohomology and the proof of Weil conjecture.

Learning seminar on p-adic Simpson *Aug.-Sept. 2024*

- Reviewed main part of Scholze's *Perfectoid Spaces* and *p-adic Hodge theory for rigid analytic varieties.*
- Learned about a p-adic Simpson correspondence from Ruochuan Liu-Xinwen Zhu's *Rigidity and a Riemann-*

Hilbert correspondence for p-adic local systems.

Reading course on Algebraic Geometry *Exercises*

- Read Hartshorne's algebraic geometry combined with Riemann surfaces, commutative algebra and homological algebra, under the instruction of Prof. Sun Hao during my undergraduate study.
- Typed some of its exercises.

Advanced courses

Finiteness for Hecke algebras of p-adic groups *Jan. 2024 - May. 2024*
Locally profinite groups, Hecke algebra, representation of p-adic reductive groups, Bernstein decomposition, contruction of moduli space of L-parameters.

Algebra and Number Theory Summer School, Peking University *July 2024 - August 2024*
Abelian Varieties; Galois Deformation; Introduction to the Langlands Program.

Nilpotent connection and monodromy theorem *Sept. 2024-present*
Algebraic de Rham cohomology, spectral sequence, Gauss-Manin connection, Deligne-Illusie theorem, the proof of local monodrony theorem

Lectures on p-adic geometry, Morningside Center *Aug. 2024-Oct. 2024*
geometry objects appearing in Fargues-Scholze. *Notes*

Graduate courses, Peking University *March 2022 - July 2022*
Representation Theory, Basic Homotopy Theory, Algebraic Number Theory (Galois Cohomology and Class Field Theory) and Algebraic Geometry (Hartshorne)

Professional Activities

Summer Research Program *Hong Kong University of Science and Technology, Hong Kong*
supervised by Prof. Weiping Li *June 2022 - Aug. 2022*
An essay about the construction of Quot schemes and some results related to deformation as my final report. *See final report*

Exchange Program to Peking University *March 2022 - July 2022*

Algebra and Number Theory Summer School, Peking University *March 2022 - July 2022*

Writings

Notes on analytic stack(Ongoing) *Notes*
Light condensed set, solid analytic rings, general notion of analytic rings.

Teaching

Teaching assistant for three undergraduate courses *Sept.2023-present*
Calculus for Engineering; Modules and Representaions; Algebraic Structures.

Scholarship

National Undergraduate Scholarship, China Mainland *2020*

Postgraduate Scholarship, Hong Kong SAR *2023-2025*

Other pertinent knowledge

Reductive group; modular forms and modular curves; Read Kerodon...

Language

Chinese(Native), English(C1), French(able to read math)