Chen Yue

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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

Exchange & Research Programs

Summer Research Program *Peking University, Beijing*
Algebra and Number Theory Summer School *July 2024 - August 2024*

- A six-week research-based summer school: computed the height filtration on flag varieties over function fields, collaborated with Haoyang Yuan under the guidance of Dr. Binggang Qu. *See Poster*.
- Participated in three topic courses: Abelian Varieties, Galois Deformation (taught by Xiao Liang), and Introduction to the Langlands Program (taught by Yihang Zhu).

Exchange Program *Peking University, Beijing*
Enhanced Program for Graduate Study in BICMR *March 2022 - July 2022*

- One-term exchange program at Peking University.
- Attended courses: Representation Theory, Basic Homotopy Theory, Algebraic Number Theory (Galois Cohomology and Class Field Theory) and Algebraic Geometry (Hartshorne).

Summer Research Program *Hong Kong University of Science and Technology, Hong Kong*
Summer research supervised by Prof. Weiping Li *March 2022 - July 2022*

An essay about the construction of Quot schemes and some results related to deformation as my final report submitted for the summer research program. See final report

Undergraduate Thesis
Supervised by Prof. Hao Sun *June 2023*

Fargues-Fontaine curve, classification of vector bundles and its geometric simple connectedness. *Thesis*

Research

Geometric height of flag varieties in positive characteristic *Sept. 2024*

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. *See our proof*

Learning Projects

Student seminar on p-adic Hodge theory

- Organized and delivered several talks in a period of one semester
- Construction of various period rings and corresponding p-adic Galois representation(Hodge-Tate, de Rham and crystalline), p-divisible groups and Dieudonne theory.
- Discussed the proof of "weakly admissable implies admissible" using the geometry of Fargues-Fontaine curve.

Student seminar on étale cohomology *Étale*

- Delivered several talks in a period of one semester.
- Formalism of étale cohomology and the proof of Weil conjecture.

Topic course in number theory(I)

Learned about locally profinite groups, Hecke algebra, representation of p-adic reductive groups, Bernstein decompositions for representations of p-adic groups, contruction of moduli space of L parameters.

Topic course in number theory(II)

- Learned about algebraic de Rham cohomology, spectral sequence, Gauss-Manin connection, Deligne-Illusie.
- The proof of Local monodrony theorem in Katz's *Nilpotent connection and monodromy theorem.*

Learning seminar on p-adic Simpson

- Learned 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.*

Notes on p-adic geometry *Notes*

Learned and took notes about geometry objects appearing in Fargues-Scholze.

Notes on Analytic stack *Notes*

- Took notes from analytic stack course on Youtube by Clausen-Scholze.
- Learned about light condensed set, solid analytic rings, general notion of analytic rings.

Learning group on Local Langlands correspondence of GL_2

- Attended the learning seminar at Hong Kong University
- Delivered a talk about unimodularity of $GL_2(K)$ and representations of Mirabolic groups.

Self learning: Reductive group

Learned about the theory of reductive groups, including Isogeny and Existence theorem.

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.

Student seminar on Lie algebras

Delivered several talks about basic notion of Lie algebras.

Self Learning: Modular forms

Learned about modular forms, Hecke operators, its geometric interpretation and Eichler-Shimura relation.

Self Learning: Infinite category

Read Kerodon.

Talks

- Delivered an introduction to p-adic Hodge theory, invited by Sun Hao, South China University of Technology.
- Delivered three informal talks about Chapter II of Fargues-Scholze, Chinese University of Hong Kong.
- Delivered two informal talks about p-adic period domains, about admissible locus of p-adic flag variety via Bun_G on Fargues-Fontaine curve as generalization of filtered isocrystals, Tsinghua University.

Teaching

Teaching assistant: Calculus for Engineering, Modules and Representaion, Algebraic Structure.