


# 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

*Summer research supervised by Prof. Weiping Li*

Science and Technology,

Hong Kong

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 Dieudonné theory.
- Discussed the proof of "weakly admissible 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, construction 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 monodromy 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  $\text{Bun}_G$  on Fargues-Fontaine curve as generalization of filtered isocrystals, Tsinghua University.

## Teaching

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