# CURRICULUM VITAE

## **Personal Information**

- Name: Yulin Cai
- Birth Date: 05/24/1990
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## Education Background:

- B.S. Mathematics, Xiamen University, Xiamen, Sep. 2009-Jul. 2013
- M.S. Mathematics, Xiamen University, Xiamen, Sep. 2013-Jul. 2016
- PhD Mathematics, University of Bordeaux, Bordeaux, Sep. 2016-Oct. 2020

## Working Exprience:

- Postdoc Mathematics, Westlake University, Hangzhou, Feb. 2021-Apr.2023
- Postdoc Mathematics, University of Regensburg, Regensburg, June. 2023-Nov. 2023

## Academic Interests

I am interested in number theory and related subjects. Right now, I am working on non-archimedean Arakelov theory. I am passionate about calculating integral solutions and rational solutions of Diophantine equations, and its connections with other subjects.

## Academic Activities

- Reading seminars:
  - Toric Varieties, Université de Grenoble, 2017
  - Abelian Varieties, Université de Bordeaux, 2017
  - Rigid Geometry, Université de Bordeaux, 2018
  - Adic Spaces, Université de Bordeaux, 2018-2019
  - Étale Fundamental Groups, Université de Bordeaux, 2019
  - Class Field Theory, Université de Bordeaux, 2019-2020
  - p-divisible Groups, Université de Bordeaux, online, 2020
  - Moduli Spaces, online, 2021
  - Syzygy, Westlake University, 2022
  - Adelic line bundles on quasi-projective varieties, University of Regensburg, 2023
- Visiting:
  - 16,Octorber 31,December,2020, Xiamen University, Xiamen, China.
- Invited Talks:
  - Integral points on modular curves, 25,November,2020, Westlake University, Hangzhou, China.
  - $\delta\text{-forms}$  on Berkovich spaces, 30, April,2022, Anhui Normal University, Wuhu, China.

- $\delta$  -forms on Berkovich spaces, 29, June,2022, Sun Yat-sen University, Guangzhou, China.
- (Series talks) Integral points on modular curves, 28, October, 2022, -11, November, 2022, Beihang University, Beijing, China.

#### Awards and Honors

- PhD Scholarship of CSC, Sep. 2016-Jul. 2020
- Hornourable Mention in the 1st Alibaba Global Mathematics Competition, 2019

## **Publications and Preprints**

- 1. (joint with Ce Xu) **On harmonic numbers and nonlinear Euler sums**, Journal of Mathematical Analysis and Applications, Volume 466, Issue 1, 1 October 2018, Pages 1009-1042,
- 2. An explicit bound of integral points on modular curves, Communications in Mathematics, Volume 30(2022), Issue 1, 161-174.
- 3. Integral points on the modular curves  $X_0(p)$ , J. Number Theory, 221(2021), 211-221.
- 4. Bound the difference of two singular moduli, *Mosc. J. Comb. Number Theory*, 10 (2021), no. 2, 95–110.
- 5. Intersection theory on non-archimedean analytic spaces, arXiv preprint arXiv:2301.02629, submitted.
- 6. Push-forwards and pull-backs of  $\delta$ -forms and applications to non-archimedean Arakelov geometry, arXiv preprint arXiv:2303.04978, submitted.

#### Working in progress

- 1. Explicite Coleman integration for curves over non-archimedean fields (joint with Alex, Enya, Timo), in progress.
- 2. Abstract divisorial spaces and adelic intersection numbers (joint with Walter Gubler), in progress.
- 3. Adelic arithmetic volumes and Hilbert-Samuel formula (joint with Debam Biswas), in progress.

#### **Dissertations**

- The proof of that E(A, B) is an abelian groups (in Chinese), bachelor thesis (defended in June 2013), advisor Prof. Yanan Lin.
- The trivial extensions of monomial algebras (in Chinese), master thesis (defended in June 2016), advisor Prof. Yanan Lin.
- Integral points of modular curves, singular moduli and conductor-discriminant inequality, PhD thesis (defended in July 2020), advisor Prof. Yuri Bilu and Prof. Qing Liu.