Curriculum Vitae
Yichao TIAN

Morningside Center of Mathematics

Academy of Mathematics and Systems Science, CAS

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Basic Information:

Date of birth: May 31, 1983

Place of birth: Sichuan/China

Current Research Interests:

Arithmetic algebraic geometry and number theroy: p-adic geometry of Shimura varieties and arithmetic applications, p-divisible groups, modular forms, Beilinson–Bloch–Kato conjecture, Iwasawa theory, p-adic Hodge theory.

Employment

- September 2021-present, Professor, Morningside Center of Mathematics, Chinese Academy of Science, Beijing, China

- September 2018-August 2021, Professor, University of Strasbourg, France

- October 2015-August 2018, Bonn Junior Fellow, Bonn University, Germany

- July 2011-Present, Professor, Academy of Mathematics and System Sciences, Chinese Academy of Science, Beijing, China

- September 2008-June 2011, Veblen Research Instructor, Princeton University and Institute for Advanced Study, USA.

Education

- Ph. D. in Mathematics, University Paris-13, France, September 2005-June 2008
  Thesis Title: "*Sous-groupes canoniques et monodromie p-adique des groupes de Barsotti-Tate*"
  Thesis Advisor: Prof. Ahmed Abbes
  Defense date: November 19th, 2007

- Master in Mathematics, University Paris-sud 11, France, September 2004-June 2005

- Bachelor in Fundamental Science, Tsinghua University, Beijing, China, September 2000-June 2004.

Publication and Prepublication

1. Iwasawa's main conjecture for Rankin–Selberg motives in the anticyclotomic case, (Joint with Yifeng Liu and Liang Xiao), arXiv:2406.00624.

2. Deformations of rigid conjugate self-dual Galois representations, (joint with Yifeng Liu, Liang Xiao, Wei Zhang, Xinwen Zhu), *Acta Math. Sinica, English Ser.*, 40(7), 1599-1644 (2024).

3. Finiteness and duality for the cohomology of prismatic crystals, *J. Reine und Ang. Math.* (Crelle's Journal), Vol. 2023, no. **800**, (2023), pp. 217-257.

4. On the Beilinson-Bloch-Kato conjecture for Rankin-Selberg motives, (joint with Yifeng Liu, Liang Xiao, Wei Zhang, Xinwen Zhu), *Invent. Math.*, Vol. **228**, 107-375 (2022).

5. Supersingular locus of Hilbert modular varieties, arithmetic level raising, and Selmer groups (joint with Yifeng Liu), *Algebra and Number Theory*, Vol. **14** (2020), No. 8, 2059–2119.

6. Tate cycles on some quaternionic Shimura varieties mod p (Joint with Liang Xiao), *Duke Math. Journal,* Vol. **168**, No. 9 (2019), 1551-1639.

7. On Tate conjecture for the special fibres of some unitary Shimura varieties (joint with David Helm and Liang Xiao), *Algebra and Number Theory*, **11** (2017), 2213-2288.

8. p-adic cohomology and classicality of overconvergent Hilbert modular forms, (Joint work with Liang Xiao), *Astérisque* **382** (2016), 73-162.

9. On Goren-Oort stratification for quaternionic Shimura varieties (Joint work with Liang Xiao), *Compostio Math.*, Vol. **152** (2016), 2134-2220.

10. Modularity lifting theorem in parallel weight one and applications to the Artin conjecture: the tamely ramified case (Joint work with Payman Kassaei and Shu Sasaki), *Forum of Math. Sigma*, Vol. **2**, 2014, e 18, p.58.

11. Classicality of overconvergent Hilbert eigenforms: Case of quadratic residue degree, *Rendiconti del Seminario Matematico della Università di Padova*, Vol. **132**, 2014, 133-229.

12. An upper bound on the ramification filtration of finite group schemes and applications, *Algebra and Number Theory*, Vol. **6**, No. 2 (2011), 231-242.

13. Canonical subgroups of Barsotti-Tate groups, *Annals of Math.*, **172** No.2 (2010), 955-988.

14. p-adic monodromy of the universal deformation of a HW-cyclic Barsotti-Tate group, *Documenta Math.* **14** (2009), 397-440.

Teaching Experience

- *Advanced Algebraic Number Theory: Class Field Theory*, Chinese Academy of Sciences, China, 2024

- *Introduction to Shimura varieties*, Chinese Academy of Sciences, China, 2023

- *TD pour le cours Équations Différentielles ordinaires*, Université de Strasbourg, France, 2021

- *TD pour le cours Théorie des Nombres*, Université de Strasbourg, France, 2020-2021

- *Algèbre Linéaire II* at Université de Strasbourg, France, 2018-2021

- *Algebraic Number Theory* in Winter semester 2017, Bonn University, Bonn, Germany.

- Graduate Student Seminar *Modular forms and Galois representations* in Summer semester 2017, Bonn University, Bonn, Germany

- *Arithmetic of Elliptic Curves* in Winter Semester 2016, at Bonn University, Bonn, Germany.

- *Introduction to Rigid Geometry* at Bonn University, Summer Semester, 2016, Bonn, Germany.

- *Introduction to Intersection Theory* at Bonn University, Winter Semester, 2015, Bonn, Germany.

- *Algebraic Number Theory* at Tsinghua University, Spring Semester, 2014, Beijing, China.

- *Basic Number Theory* at Summer School at Tsinghua University, July-August 2011, Beijing, China.

- *Abelian Varieties* at a Summer School at Tsinghua University, July-August 2010, Beijing, China.

- **Mat204** *Advanced Linear Algebra*, 2011 Spring, Princeton University

- **Mat202** *Linear Algebra*, 2010 Spring and Fall, Princeton University

- **Mat201** *Multivariable Calculus*, 2009 Fall, Princeton University

- Teaching Assistant for *Galois Theory*, September 2006-June 2007, University Paris-13, France

- Teaching Assistant for *Linear Algebra*, September 2005-June2006, University Paris-13, France

Visiting Experience of more than two weeks

- September 17th-October 17th, 2014, Institut des Hautes Etudes Scientifiques, Bures-sur-Yvette, 91440, France.

- September 1st-September 30th, 2013, Institut des Hautes Etudes Scientifiques, Bures-sur-Yvette, 91440, France.

- October 1st-November 30th, 2012, Institut des Hautes Etudes Scientifiques, Bures-sur-Yvette, 91440, France.

- March 4th-March 31st, 2012, Université Paris-Nord 13, Villetaneuse, 93430, France.

- September 1st-September 30th 2011, Institut des Hautes Etudes Scientifiques, Bures-sur-Yvette, 91440, France.

- June 28th 2010-August 28th 2010, Mathematical Science Center of Tsinghua University, Beijing, 100084, China

- August 1st 2009-August 23th 2009, Morningside Center of Mathematics, Beijing, 100190, China

- June 1st 2009-July 30th 2009, Institut des Hautes Etudes Scientifiques, Bures-sur-Yvette, 91440, France

Selected Lectures

1. *Cohomology of prismatic crystals*, Conference on Arithmetic Geometry in honor of Luc Illusie, June 7th-11th, 2021, IHES.

2. *Beilinson-Bloch-Kato conjecture for Rankin-Selberg motives*, Arithmetic Geometry in Carthage, June 17-26, Carthage, 2019, Tunisia.

3. *Supersingular locus of Hilbert modular varieties and arithmetic applications*, 45 minutes talk at 7th International Congress of Chinese Mathematicians, August 9th 2016, Beijing, China.

4. *On the Goren-Oort stratification of quaternionic Shimura varieties and applications*, 45 minutes talk at 6th International Congress of Chinese Mathematicians, July 18th, 2013, Taipei, China.

5. *Cohomologie p-adique et classicité des formes cuspidales surconvergentes de Hilbert*, Deuxième journée du programme ANR Théorie de Hodge p-adique et Développement, October 5th, 2012, IHES, France

6. *Analytic continuation of overconvergent Hilbert modular forms of parallel weight one*, Workshop on the p-adic Langlands program: recent developments and applications, April 23-27, 2012, Fields Institute, Toronto, Canada.

7. *Classicality of overconvergent Hilbert modular forms in the quadratic inert case*, in the conference "Automorphic forms and Galois representations" organized by London Mathematical Society at Durham, U.K, July 18th-28th, 2011.

8. *p-Adic Analytic Continuation of Genus 2 Overconvergent Hilbert Eigenforms in the Inert Case* , at Galois representation and automorphic forms Seminar, Institute for Advanced Study, Princeton, NJ, 08540, March 17th, 2011.

9. *From ramification filtration to higher canonical subgroups*, in the international conference "Formes Modulaires, Thérie de Hodge p-adique et Applications" Roscoff (France), July 13th-17th, 2009

10. *Canonical subgroups of p-divisible groups*, in Algebraic Geometry Seminar in Mathematics Department of Princeton University, February 24th, 2009

11. *p-adic monodromy of the universal deformations of Barsotti-Tate groups*, in the conference "Of Ramification and Vanishing Cycles" Mathematics Department, Tokyo University, Japan, September 10th-14th, 2007

12. *Ramification et monodromie des groupes de Barsotti-Tate*, in the Mini-Conference "Géométrie Arithmétique, Représentations Galoisiennes et Formes Modulaires" University Paris-13, France, June 6-8, 2007