Shen-Ning Tung Curriculum Vitae

National Tsing Hua University
Department of Mathematics
Room 515, General Building III
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Research Interests

Mathematical Finance, Optimization and Control, Decentralized Finance, Automatic Market Makers
Number Theory, Galois Representations, Automorphic Forms, p-adic Local Langlands

Employment

2022 - now **Assistant Professor**, Department of Mathematics, National Tsing Hua University

2019 - 2022 **Postdoctoral Fellow**, Department of Mathematics, University of British Columbia
Advisor: Rachel Ollivier and Sujatha Ramdorai

Education

2015 - 2019 **Ph.D. in Mathematics**, Universität Duisburg-Essen
Advisor: Vytautas Paškūnas
Dissertation: On the automorphy of 2-dimensional potentially semi-stable deformation rings of $G_{\mathbb{Q}_p}$

2016 - 2015 **M.Sc. in Mathematics**, University of British Columbia
Advisor: Sujatha Ramdorai
Thesis: Fontaine rings and p-adic L-functions

2008 - 2012 **B.S. in Mathematics**, National Taiwan University

Grants

2022 - 2025 **NSTC Research Fellowship**, NTD2,116,000
Patching and the completed homology of locally symmetric space

Graduate Students Supervised

2022 - now Wei-Ru Chen (co-supervised with Yuki Chino)

Service

2023 - 2024 Organizer, Colloquium, Department of Mathematics, National Tsing Hua University
2023 - 2024 Mentor, Undergraduate Research Program, National Center for Theoretical Sciences
2022 Organizing committee member, Annual Meeting, Taiwanese Mathematical Society

Teaching

- Math570 Financial Mathematics I, National Tsing Hua University, Winter 2023
- Math104 Calculus II, National Tsing Hua University, Spring 2023
- Math103 Calculus I, National Tsing Hua University, Winter 2022
- Math317 Vector Calculus, University of British Columbia, Spring 2022
- Math220 Mathematical Proof, University of British Columbia, Winter 2021
- Math220 Mathematical Proof, University of British Columbia, Winter 2020
- Math253 Multivariable Calculus, University of British Columbia, Summer 2020

- Math105 Integral Calculus with Applications to Commerce and Social Sciences, University of British Columbia, Spring 2020
- Math104 Differential Calculus with Applications to Commerce and Social Sciences, University of British Columbia, Winter 2019

Research Visits

Dec 2020 - Feb 2021	Academia Sinica, Taiwan	Host: Ming-Lun Hsieh
May 2020 - Jun 2020	Academia Sinica, Taiwan	Host: Ming-Lun Hsieh
Jul 2019	Academia Sinica, Taiwan	Host: Ming-Lun Hsieh
Jul 2019	Morningside Center of Mathematics, China	Host: Yongquan Hu
May 2018	University of Cambridge, UK	Host: Jack Thorne

Invited Talks

2020	Feb	Number theory seminar, University of Toronto
2019	Jul	Number theory seminar, Academia Sinica
	Jul	Number theory seminar, Morningside Center of Mathematics
2018	Jul	Number theory seminar, University of Bonn
	May	Number theory seminar, University of Cambridge
	Mar	Number theory seminar, University of British Columbia

Conferences / Workshop Attended

- Spring School Towards a Mod p Langlands Correspondence, Essen (online), April 26-30, 2021.
- Serre Conjectures and p-adic Langlands Program, Padova, May 27- June 14, 2019.
- Workshop on Galois Representations, Heidelberg, July 9-12, 2018.
- p-adic Langlands Correspondence, Shimura Varieties and Perfectoids, CIRM, July 2-6, 2018.
- Galois Representations and Automorphic Forms, Będlewo, Aug. 14-20, 2016.
- The p-Adic Langlands Program and Related Topics, Indiana University, Bloomington, May 16-20, 2016.
- Motives and Automorphic Forms, Oxford, Sep. 28- Oct. 02, 2015.
- Workshop "p-adic Hodge theory and Iwasawa theory", Universität Bielefeld, Sep. 14-18, 2015.
- Summer School on Perfectoid Spaces, Brixen/Bressanone, Aug. 31- Sep. 04, 2015.
- p-adic Methods in the theory of Classical Automorphic Forms, CRM, Mar. 9-14, 2015.
- Automorphic forms, Shimura varieties, Galois representations and L-functions, MSRI, Dec. 01-05, 2014.
- p-Adic Aspects of Modular Forms, IISER Pune, June 10-20, 2014.

Publications

1. Finiteness properties of the category of mod p representations of $\mathrm{GL}_2(\mathbb{Q}_p)$
   Forum of Mathematics, Sigma, 9. (2021) (Joint with Vytautas Paškūnas)
2. On the modularity of 2-adic potentially semi-stable deformation rings
   Math. Z. 298, 107-159 (2021).
3. On the automorphy of 2-dimensional potentially semi-stable deformation rings of $G_{\mathbb{Q}_p}$
   Algebra & Number Theory, 15 (2021), No. 9, 2173–2194.

Preprints

1. An arbitrage driven price dynamics of Automated Market Makers in the presence of fees
   arXiv:2401.01526 (Joint with Joseph Najnudel, Kazutoshi Yamazaki and Ju-Yi Yen)
2. Growth rate of liquidity provider's wealth in G3Ms
   arXiv:2403.18177 (Joint with Cheuk Yin Lee and Tai-Ho Wang)

References

Prof. Tai-Ho Wang
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Prof. Shuenn-Jyi Sheu
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Prof. Ju-Yi Yen (concerning teaching)
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