

Wei-Lun Tsai

Curriculum Vitae

Department of Mathematics
University of Virginia, Charlottesville, VA 22904
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Employment

August, 2023 – **Tenure Track Assistant Professor**, *University of South Carolina*.

2020 – present **Research Postdoctoral Fellow**, *University of Virginia*.

Mentor: Professor [Ken Ono](#)

2013 – 2014 **Research Assistant**, *Institute of Mathematics, Academia Sinica*.

Mentor: Professor [Chia-Fu Yu](#)

Education

2015 – 2020 **Ph.D. in Mathematics**, *Texas A&M University*.

Thesis Title: *The distribution of Fourier coefficients of weak Maass forms*

Advisor: Professor [Riad Masri](#)

GPA: 4.0/4.0

2007 – 2012 **B.S. & M.Sc. in Mathematics**, *National Taiwan University*.

Advisor: Professor [Ki-Seng Tan](#)

Research Interests

Number Theory: automorphic and modular forms, elliptic curves, L -functions, number fields, and partitions.

Preprints

1. **On the nonvanishing of central values and derivatives of modular L -functions in families of quadratic twists**, (with A. Burungale and K. Ono), in preparation.
2. **Equidistribution of Fourier coefficients of half-integral weight Maass-Poincaré series**, (with R. Masri), submitted for publication.
3. **Malle's conjecture for $G \times A$, with $G = S_3, S_4, S_5$** , (with R. Masri, F. Thorne, and J. Wang), submitted for publication.

Publications

1. **Limiting Betti distributions of Hilbert schemes on n points**, (with M. Griffin, K. Ono, and L. Rolén), *Canadian Mathematical Bulletin*, in press.
2. **AGM and jellyfish swarms of elliptic curves**, (with M. Griffin, K. Ono, and N. Saikia), *American Mathematical Monthly*, in press.
3. **Distributions of hook lengths in integer partitions**, (with M. Griffin, and K. Ono), *Proceedings of the American Mathematical Society–Series B*, in press.

4. **Variants of Lehmer's speculation for newforms**, (J. S. Balakrishnan, W. Craig, and K. Ono), *Advances in Mathematics*, in press.
5. **Equidistribution of Fourier coefficients of integral weight Maass-Poincaré series**, (with R. Masri), *Advances in Mathematics*, **409**, Part A (2022).
6. **Even values of Ramanujan's tau-function**, (with J. S. Balakrishnan, and K. Ono), *La Matematica*, **1**, 394-403 (2022).
7. **Tamagawa products of elliptic curves over \mathbb{Q}** , (with M. Griffin, and K. Ono), *Quarterly Journal of Mathematics* (Oxford), [Sir Michael Atiyah Memorial Issue] **72**, Issue 4, 1517-1543, (2021).
8. **Heights of points on elliptic curves over \mathbb{Q}** , (with M. Griffin, and K. Ono), *Proceedings of the American Mathematical Society*, **149**, 5093-5100, (2021).
9. **The asymptotic distribution of traces of weak Maass forms**, (with N. Khaochim and R. Masri), *Mathematika*, **67**, 739-787 (2021).
10. **Quadratic twists of elliptic curves and class numbers**, (with M. Griffin, and K. Ono), *Journal of Number Theory*, **227**, 1-29 (2021).
11. **Computing Stark units as special Gamma values**, (with A. Barquero-Sanchez and R. Masri), *Research in Number Theory*, **7**:38 (2021).
12. **Asymptotic distribution of the partition crank**, (with A. Hamakiotes and A. Kriegman), *The Ramanujan Journal*, **56**, 803-820 (2021).
13. **Effective bounds for traces of singular moduli**, (with H. Ellers, M. Kenney and R. Masri), *Journal of Number Theory*, **212**, 1-17 (2020).
14. **Nonvanishing of Hecke L -functions and Bloch-Kato p -Selmer groups**, (with A. Iannuzzi, B. D. Kim, R. Masri, A. Mathers and M. Ross), *Mathematical Research Letters*, **26**:4 (2019).
15. **An effective bound for the partition function**, (with N. Khaochim and R. Masri), *Research in Number Theory*, **5**:14 (2019).

Mentoring

- Summer 2023 **Mentor**, *Summer REU*, University of Virginia.
- Summer 2022 **Mentor**, *Summer REU*, University of Virginia.
- Summer 2021 **Mentor**, *Summer REU*, University of Virginia.
- Summer 2020 **Mentor**, *Summer REU*, University of Virginia.
- Summer 2019 **Graduate Student Mentor**, *Summer REU*, Texas A&M University.
- Spring 2019 **Mentor**, *Directed Reading Program*, Texas A&M University.
Topic: *The zeros of the Riemann zeta function*
- Fall 2018 **Mentor**, *Directed Reading Program*, Texas A&M University.
Topic: *The distribution of prime numbers*
- Summer 2018 **Graduate Student Mentor**, *Summer REU*, Texas A&M University.
- Summer 2017 **Graduate Student Mentor**, *Summer REU*, Texas A&M University.

Honors and Awards

- 2023-2025 **AMS-Simons Travel Grant**, *AMS & Simons Foundation*.

- August, 2021 **Visiting Scientist**, *Max Planck Institute for Mathematics*.
2015-2020 **Graduate Assistantship**, *Texas A&M University*.
2015-2020 **Graduate Student Travel Grant**, *Texas A&M University*.
2012 **Outstanding Teaching Assistant Award**, *National Taiwan University*.

Teaching Experience

- Spring 2023 **Instructor**, *Survey of Algebra*, University of Virginia.
Spring 2023 **Instructor**, *Calculus III*, University of Virginia.
Fall 2022 **Instructor**, *Calculus III*, University of Virginia.
Summer 2022 **Instructor**, *A Survey of Calculus II*, University of Virginia.
Spring 2022 **Instructor**, Graduate Course on *Commutative Algebra*, University of Virginia.
Fall 2021 **Instructor**, *Calculus III* (2 sections), University of Virginia.
Spring 2021 **Instructor**, *Survey of Algebra*, University of Virginia.
Spring 2021 **Recitation Instructor**, *Basic Real Analysis*, University of Virginia.
Fall 2020 **Instructor**, *Calculus III*, University of Virginia.
Fall 2020 **Recitation Instructor**, *Calculus III*, University of Virginia.
Fall 2019 **Teaching Assistant**, *Engineering Mathematics I*, Texas A&M University.
Fall 2018 **Instructor**, *Mathematical Concepts-Calculus*, Texas A&M University.
Summer 2018 **Instructor**, Graduate Course on *Qualifying Examination Preparation Course*, Texas A&M University.

Selected Talks

- March 11, 2023 Southern Regional Number Theory Conference, Louisiana State University.
February 13, 2023 Seminar on Research in Mathematics, University of Virginia.
January 4, 2023 Joint Mathematics Meeting, AMS Special Session on Modular Forms, Hypergeometric Functions, Character Sums and Galois Representations.
January 4, 2023 Joint Mathematics Meeting, AWM Special Session on Celebrating the Mathematical Contributions of the AWM.
February 7, 2022 Number Theory Seminar, Boston University.
January 28, 2022 Number Theory Seminar, University of Cologne.
November 19, 2021 Number Theory Seminar, National Center for Theoretical Sciences-NCTS.
April 7, 2021 Number Theory Seminar, Vanderbilt University.
March 19, 2021 Number Theory Seminar, University of Virginia.

Referee Service

Annales mathématiques du Québec, *Annals of Combinatorics*
Expositiones Mathematicae, *Houston Journal of Mathematics*
International Journal of Number Theory
Proceedings of the American Mathematical Society (4 times + 1 quick opinion)
Research in the Mathematical Sciences, *Research in Number Theory* (5 times)
Taiwanese Journal of Mathematics, *The Australasian Journal of Combinatorics*
The Ramanujan Journal (2 times)