

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 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 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.
- Fall 2018 **Mentor**, *Directed Reading Program*, Texas A&M University.
- Summer 2018 **Graduate Student Mentor**, *Summer REU*, Texas A&M University.
- Summer 2017 **Graduate Student Mentor**, *Summer REU*, Texas A&M University.

Teaching Experience

- 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.
 Fall 2017 **Teaching Assistant**, *Engineering Mathematics I*, Texas A&M University.
 Spring 2017 **Teaching Assistant**, *Engineering Mathematics I*, Texas A&M University.
 Fall 2016 **Teaching Assistant**, *Engineering Mathematics I*, Texas A&M University.
 Spring 2016 **Teaching Assistant**, *Engineering Mathematics II*, Texas A&M University.

Selected Talks

- March, 2023 Southern Regional Number Theory Conference, Louisiana State University.
 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.
 November 30, 2020 Number Theory Seminar, Washington State University.
 April 13, 2019 Southern Regional Number Theory Conference, Louisiana State University.
 April 4, 2019 Number Theory Seminar, University of Wisconsin-Madison.
 March 27, 2019 Number Theory Seminar, Texas A&M University.
 June 1, 2018 CTNT 2018 Conference, University of Connecticut.
 March 20, 2018 32th Automorphic Forms Workshop, Tufts University.
 February 28, 2018 Number Theory Seminar, Texas A&M University.

Honors and Awards

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

Referee Service

Annales mathématiques du Québec, *Expositiones Mathematicae*
Finite Fields and Their Applications, *Houston Journal of Mathematics*
Proceedings of the American Mathematical Society (4 times + 1 quick opinion)
Research in the Mathematical Sciences, *Research in Number Theory* (4 times)
Taiwanese Journal of Mathematics, *The Ramanujan Journal* (2 times)