

Jesse Thorner

CONTACT INFORMATION jthorner@ufl.edu

RESEARCH INTERESTS Analytic number theory, automorphic forms, distribution of primes, elliptic curves, modular forms, pretentious analytic number theory, sieve methods, special values of L -functions, zeros of L -functions.

CURRENT POSITIONS **University of Florida**
Assistant Professor, Aug 2019 - Present

PREVIOUS POSITIONS **Stanford University**
NSF Mathematical Sciences Postdoctoral Fellow, Aug 2016 - Aug 2019
MSRI Postdoctoral Fellow (concurrent), Jan - May 2017

EDUCATION **Emory University**
Ph.D. in Mathematics, 2016
Advisor: Ken Ono
Dissertation: *Topics in analytic number theory*

Wake Forest University
M.A. in Mathematics, May 2013
Advisor: Jeremy Rouse
Thesis: *The explicit Sato-Tate conjecture and densities pertaining to Lehmer-type questions*

Duke University
B.S. in Mathematics, May 2009
Graduation with distinction in mathematics

- PUBLICATIONS (FINISHED)
16. Jensen polynomials for the Riemann ξ function (with Michael Griffin, Ken Ono, Larry Rolen, Zachary Tripp, and Ian Wagner), submitted.
 15. A zero density estimate for Dedekind zeta functions (with Asif Zaman), submitted.
 14. An unconditional GL_n large sieve (with Asif Zaman), submitted.
 13. Zeros of Rankin-Selberg L -functions at the edge of the critical strip (with Farrell Brumley and Asif Zaman), submitted.
 12. Weak subconvexity without a Ramanujan hypothesis (with Kannan Soundararajan, appendix by Farrell Brumley), *Duke Mathematical Journal*, accepted for publication.
 11. A unified and improved Chebotarev density theorem (with Asif Zaman), *Algebra and Number Theory*, accepted for publication.

10. Special Values of Motivic L -Functions and Zeta-Polynomials for Symmetric Powers of Elliptic Curves (with Wenjun Ma and Steffen L obrich), *Research in Mathematical Sciences*, **4** (2017), Paper No. 26, 16pp.
9. A Chebotarev variant of the Brun-Titchmarsh theorem and bounds for the Lang-Trotter conjectures (with Asif Zaman), *International Mathematics Research Notices* (2018), no. 16, 4991–5027.
8. An explicit bound for the least prime ideal in the Chebotarev density theorem (with Asif Zaman), *Algebra and Number Theory*, **11** (2017), no. 5, 1135–1197.
7. Bounded gaps between primes in multidimensional Hecke equidistribution problems, *Mathematical Research Letters*, accepted for publication.
6. Effective log-free zero density estimates for automorphic L -functions and the Sato-Tate conjecture (with Robert Lemke Oliver), *International Mathematics Research Notices*, accepted for publication.
5. Benford’s law for coefficients of newforms (with Marie Jameson and Lynelle Ye), *International Journal of Number Theory*, **12** (2016), no. 2, 483–494.
4. The error term in the Sato-Tate Conjecture, *Archiv der Mathematik (Basel)* **103** (2014), no. 2, 147–156.
3. A variant of the Bombieri-Vinogradov theorem in short intervals and some questions of Serre, *Mathematical Proceedings of the Cambridge Philosophical Society* **161** (2016), no. 1, 53–65.
2. Bounded gaps between primes in Chebotarev sets, *Research in the Mathematical Sciences*, **1** (2014), Art. 4, 16pp.
1. The explicit Sato-Tate conjecture and densities pertaining to Lehmer-type questions (with Jeremy Rouse), *Transactions of the American Mathematical Society*, **369** (2017), no. 5, 3575–3604.

PUBLICATIONS
(IN PROGRESS)

5. A highly uniform prime number theorem for arithmetic progressions.
4. The distribution of values of $L(1, \chi)$ over number fields (with Robert Lemke Oliver and Benjamin Linowitz).
3. Large sums of Hecke eigenvalues and zeros of L -functions (with Oleksiy Klurman).
2. Critical zeros of $GL(2)$ L -functions (with Nickolas Andersen).
1. New bounds for the Selberg zeta function.

PUBLICATIONS
(WITH STUDENTS)

Students are marked with *.

1. The explicit Sato–Tate conjecture for primes in arithmetic progressions (with Trajan Hammonds*, Casimir Kothari*, Noah Luntzlar*, Steven J. Miller, and Hunter Wieman*), submitted.

TEACHING
EXPERIENCE

Courses at University of Florida:

- Fall 2019 Course Instructor, MAS 4105 (Linear Algebra 1)
- Fall 2019 Course Instructor, MAA 4402 (Functions of a Complex Variable)
- Fall 2019 Course Instructor, MAA 5404 (Introduction to Complex Variables)

Courses at Stanford University:

- Spring 2019 Course Instructor, Math 115 (Functions of a Real Variable)
- Fall 2018 Course Instructor, Math 115 (Functions of a Real Variable)
- Spring 2018 Course Instructor, Math 109 (Applied Group Theory)
- Spring 2018 Course Instructor, Math 155 (Analytic Number Theory)
- Fall 2018 Course Instructor, Math 115 (Functions of a Real Variable)
- Spring 2019 Course Instructor, Math 115 (Functions of a Real Variable)

Courses at Emory University:

- Spring 2015 Course Instructor, Math 111 (Calculus I), Section 5
- Fall 2015 Course Instructor, Math 111 (Calculus I), Sections 1 & 2
- Spring 2016 Course Instructor, Math 112 (Calculus II), Section 5

MENTORSHIP
AND
OUTREACH

- Supervised undergraduate summer research projects as part of the REU programs at Emory University and Williams College
6. REU 2019, Emory University.
 - Ji, Caleb and Kazdan, Joshua and McDonald, Vaughan. Primes with Beatty and Chebotarev conditions, submitted.
 - Gillman, Nate and Kural, Michael and Pascadi, Alexandru and Pengm Junyao and Sah, Ashwin. Patterns of primes in the Sato–Tate conjecture, submitted.
 - Kural, Michael and McDonald, Vaughan and Sah, Ashwin. Möbius formulas for densities of sets of prime ideals, submitted.
 5. REU 2018, SMALL Undergraduate Research Project, Williams College (Trajan Hammonds, Casimir Kothari, Noah Luntzlar, Hunter Wieman).
 - The explicit Sato–Tate conjecture for primes in arithmetic progressions, submitted.
 4. REU 2017, Emory University (Ryan Alweiss, Sammy Luo).
 - Bounded gaps between primes in short intervals, *Research in Number Theory*, **4** (2018), no. 2, Art. 15, 27pp.
 3. REU 2016, Emory University (Yang Liu, Peter Park, Z. Song).
 - The “Riemann hypothesis” is true for period polynomials of almost all newforms, *Research in Mathematical Sciences*, **3** (2016), Paper No. 31, 11pp.
 - Bounded gaps between products of distinct primes, *Research in Number Theory*, Art. 26, 28pp.

2. REU 2015, Emory University (Evan Chen, Peter Park, Ashvin Swaminathan). A. Swaminathan won the 2018 Frank and Brennie Morgan Prize for Outstanding Research in Mathematics. P. Park and A. Swaminathan are 2016 Barry M. Goldwater Fellows. All three have NSF Graduate Fellowships.

- Elliptic curve variants of the least quadratic nonresidue problem and Linnik’s theorem, *International Journal of Number Theory*, **14** (2018), no. 1, 255–288.
- On logarithmically Benford sequences, *Proceedings of the American Mathematical Society* **144** (2016), no. 11, 4599–4608.
- Linnik’s theorem for the Sato-Tate laws on elliptic curves with complex multiplication, *Research in Number Theory* **1** (2015), Art. 28, 11 pp.

1. REU 2014, Emory University (Lynn Chua, Soohyn Park, Geoffrey Smith). G. Smith is a 2014 Barry M. Goldwater Fellow.

- Bounded gaps between primes in special sequences, *Proceedings of the American Mathematical Society* **143** (2015), no. 11, 4597–4611.
- I supervised the Emory University Math Circle outreach for high school students during the 2014-2015 and 2015-2016 academic years. I helped supervise a session with the Berkeley Math Circle in 2017.

FELLOWSHIPS
AND
AWARDS

2. NSF Mathematical Sciences Postdoctoral Fellowship, 2016-2019
1. Schoettle Graduate Research Award, Emory University, 2016

INVITED
TALKS

27. *TBD*, Special Session on "Young Guns" in Arithmetic Geometry and Number Theory, Spring Southeastern AMS Sectional Meeting, University of Virginia, Charlottesville, VA. March 2020.
26. *A new approach to bounding L-functions*, Number Theory Seminar, University of Illinois, Urbana-Champaign, IL. October 2019.
25. *The Chebotarev density theorem on average*, Algebra and Number Theory Seminar, Rice University, Houston, TX. October 2019.
24. *An unconditional large sieve inequality for L-functions on GL_n* , Number Theory Seminar, Stanford University, Stanford, CA. March 2019.
23. *Mass equidistribution on average*, Special Session on Recent Advances and Applications of Modular Forms, Spring Central and Western Joint AMS Sectional Meeting, University of Hawaii at Manoa, Honolulu, HI. March 2019.
22. *A new approach to bounding L-functions*, Algebra and Number Theory Seminar, Emory University, Atlanta, GA. February 2019.
21. *A new approach to bounding L-functions*, Mid-Atlantic Seminar on Numbers, James Madison University, Harrisonburg, VA. February 2019.

20. *A new approach to bounding L -functions*, Mathematics Colloquium, College of William and Mary, Williamsburg, VA. February 2019.
19. *Weak subconvexity without a Ramanujan hypothesis*, Number Theory Seminar, Brigham Young University, Provo, UT. January 2019.
18. *A new approach to bounding L -functions*, Mathematics Colloquium, Dartmouth College, Hanover, NH. January 2019.
17. *Weak subconvexity without a Ramanujan hypothesis*, AMS Special Session on Analytic Number Theory, Joint Mathematics Meetings, Baltimore, MD. January 2019.
16. *Weak subconvexity without a Ramanujan hypothesis*, Number Theory Seminar, University of California, Los Angeles, CA. February 2018.
15. *Weak subconvexity without a Ramanujan hypothesis*, Number Theory Seminar, California Institute of Technology, Pasadena, CA. January 2018.
14. *New bounds for the Chebotarev density theorem*, Analytic Number Theory Seminar, Mathematical Sciences Research Institute, Berkeley, CA. February 2017.
13. *Averages of twisted $GL(2)$ L -functions*, AMS Special Session on Analytic Number Theory and Arithmetic, Joint Mathematics Meetings, Atlanta, GA. January 2017.
12. *An explicit bound for the least prime ideal in the Chebotarev density theorem*, Algebra and Geometry Seminar, Tufts University, Medford, MA. November 2016.
11. *An explicit bound for the least prime ideal in the Chebotarev density theorem*, Faculty Seminar, Williams College, Williamstown, MA. October 2016.
10. *Effective log-free zero density estimates for automorphic L -functions and the Sato-Tate conjecture*, Number Theory Seminar, Stanford University, Stanford, CA. October 2016.
9. *Effective log-free zero density estimates for automorphic L -functions and the Sato-Tate conjecture*, Number Theory Seminar, University of Georgia, Athens, GA. April 2016.
8. *Effective log-free zero density estimates for automorphic L -functions and the Sato-Tate conjecture*, Algebra and Number Theory Seminar, Emory University, Atlanta, GA. March 2015.
7. *Effective log-free zero density estimates for automorphic L -functions and the Sato-Tate conjecture*, Algebra and Number Theory Seminar, University of South Carolina, Columbia, SC. March 2015.
6. *Bounded gaps between primes in Chebotarev sets*, SASTRA-Ramanujan Conference, SASTRA University, Tamil Nadu, India. December 2014.
5. *The error term in the Sato-Tate conjecture*, Analytic Number Theory Seminar, Université de Montréal, Montréal, Canada. October 2014.
4. *Bounded gaps between primes in Chebotarev sets*, Algebra Seminar, Georgia Institute of Technology, Atlanta, GA. April 2014.

CONTRIBUTED
TALKS

3. *Bounded gaps between primes in Chebotarev sets*, Special Session on Recent Developments in Number Theory, Spring Central AMS Sectional Meeting, Texas Tech University, Lubbock, TX. April 2014.
2. *Bounded gaps between primes in Chebotarev sets*, Number Theory Seminar, Texas A&M University, College Station, TX. April 2014.
1. *Bounded gaps between primes in Chebotarev sets*, Algebra and Number Theory Seminar, Emory University, Atlanta, GA. February 2014.
15. *Mass equidistribution on average*, Automorphic Forms Workshop, Duquesne University, Pittsburgh, PA. March 2019.
14. *Weak subconvexity without a Ramanujan hypothesis*, Canadian Number Theory Association, Université Laval, Quebec, Canada. July 2018.
13. *Weak subconvexity without a Ramanujan hypothesis*, Automorphic Forms Workshop, Tufts University, Medford, MA. March 2018.
12. *The least prime in the Chebotarev density theorem*, Automorphic Forms Workshop, Wake Forest University, Winston-Salem, NC. March 2016.
11. *Applications of an effective log-free zero density estimate for automorphic L -functions*, Southeastern Regional Meeting on Numbers, Winthrop University, Rock Hill, SC. March 2015.
10. *Applications of an effective log-free zero density estimate for automorphic L -functions*, Automorphic Forms Workshop, University of Michigan, Ann Arbor, MI. March 2015.
9. *Bounded gaps between primes in Chebotarev sets*, Workshop on Bounded Gaps Between Primes, American Institute of Mathematics, Palo Alto, CA. November 2014.
8. *Effective forms of the Sato-Tate conjecture*, Clay Mathematics Institute Workshop in Analytic Number Theory, Oxford University, UK. October 2014.
7. *Bounded gaps between primes in Chebotarev sets*, Automorphic Forms Workshop, Moab, UT. May 2014.
6. *Bounded gaps between primes in Chebotarev sets*, Southeastern Regional Meeting on Numbers, Wofford College, Spartanburg, SC. April 2014.
5. *The explicit Sato-Tate conjecture and densities pertaining to Lehmer-type questions*, Southeastern Regional Meeting on Numbers, High Point University, High Point, NC. April 2013.
4. *The explicit Sato-Tate conjecture and densities pertaining to Lehmer-type questions*, Automorphic Forms Workshop, University College, Dublin, Ireland. March 2013.
3. *Explicit bounds on densities pertaining to Lehmer-type questions*, Joint Mathematics Meetings, San Diego, CA. January 2013.
2. *Explicit bounds on densities pertaining to Lehmer-type questions*, Palmetto Number Theory Series, Wake Forest University, Winston-Salem, NC. September 2012.

PROFESSIONAL
SERVICE

1. Refereed research articles for:
 - Duke Mathematical Journal
 - International Mathematical Research Notices
 - Journal of the London Mathematical Society
 - Journal of Number Theory
 - Journal of the Ramanujan Mathematical Society
 - Mathematical Proceedings of the Cambridge Philosophical Society
 - Proceedings of the American Mathematical Society
 - Research in the Mathematical Sciences
 - Research in Number Theory
 - Transactions of the American Mathematical Society
2. Organizing AMS Special Session on Analytic Theory of Automorphic Forms and L -Functions (with Amanda Folsom, Michael Griffin, and Larry Rolen) for the 2020 Joint Mathematics Meetings in Denver, CO