Ellen E. Eischen

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Primary research area

Algebraic number theory, automorphic forms, and L-functions, especially p-adic methods

Employment

- **University of Oregon**, 2015–present
  - Current: Associate Professor
  - Previous: Assistant Professor
- **The University of North Carolina at Chapel Hill**, Assistant Professor, 2012–2015
- **Northwestern University**, Ralph Boas Assistant Professor, 2009–2012
  Postdoctoral mentor: Matthew Emerton (now at University of Chicago)

Education

- **University of Michigan, Ann Arbor**, PhD in Mathematics, 2009
  Dissertation advisor: Christopher Skinner (now at Princeton University)
- **Princeton University**, A.B. *summa cum laude* in Mathematics, 2003
  Senior thesis advisor: Andrew Wiles (now at University of Oxford)

Bibliography

- **Research papers**
  - *Archimedean zeta integrals for unitary groups.* E. Eischen and Z. Liu. 29 pages. Submitted. https://arxiv.org/pdf/2006.04302.pdf
  - *Entire theta operators at unramified primes.* E. Eischen and E. Mantovan. 42 pages. Submitted. https://arxiv.org/pdf/2002.09450.pdf
  - *An Introduction to Eisenstein Measures.* E. Eischen. 26 pages. Submitted. https://arxiv.org/pdf/2101.01879.pdf
  - *Differential operators mod p: analytic continuation and consequences.* E. Eischen, M. Flander, A. Ghitza, E. Mantovan, and A. McAndrew. 34 pages. Accepted for publication in Algebra & Number Theory. https://arxiv.org/pdf/1902.10911.pdf
  - *p-adic families of automorphic forms in the μ-ordinary setting.* E. Eischen and E. Mantovan. 52 pages. To appear in the American Journal of Mathematics, Volume 143, Number 1, February 2021. Earlier version at https://arxiv.org/pdf/1710.01864.pdf
  - *Applications of nonarchimedean developments to archimedean nonvanishing results for twisted L-functions.* E. Eischen. Math. Res. Lett. 27 (2020), no. 4, 973–1002. https://dx.doi.org/10.4310/MRL.2020.v27.n4.a2

Research Papers, continued

- *p-adic L-functions for unitary groups.* E. Eischen, M. Harris, J.-S. Li, and C. Skinner. Forum of Mathematics, Pi. Volume 8 (2020), E9, 160 pages. http://doi.org/10.1017/fmp.2020.4.
- *A gallery of Gaussian periods.* E. Eischen and S. Garcia. Proceedings of Bridges 2020: Mathematics, Art, Music, Architecture, Education, Culture. Carolyn Yackel, Robert Bosch, Eve Torrence, and Kristóf Fenyvesi, eds., Tessellations Publishing (2020), 243–248. http://archive.bridgesmathart.org/2020/bridges2020-243.html
  Associated computer app: http://www.elleneischen.com/gaussianperiods.html.
- *Bootstrapping estimates of stability for clusters, observations, and model selection.* H. Yu, B. Chapman, A. Di Florio, E. Eischen, D. Gotz, M. Jacob, and R. Hageman Blair. Computational Statistics. Volume 34 (2019), Issue 1, 349–372.
  http://doi.org/10.1007/s00180-018-0830-y
  Associated R package: https://cran.r-project.org/web/packages/bootcluster/bootcluster.pdf
- *Differential operators and families of automorphic forms on unitary groups of arbitrary signature.* E. Eischen, J. Fintzen, E. Mantovan, and I. Varma. Doc. Math. 23 (2018), 445–495. http://doi.org/10.25537/dm.2018v23.445-495
- *p-adic Eisenstein series and L-Functions of certain cusp forms on definite unitary groups.* E. Eischen and X. Wan. J. Inst. Math. Jussieu. 15 (2016), no. 3, 471–510.
  http://dx.doi.org/10.1017/S1474748014000395
- *Differential operators, pullbacks, and families of automorphic forms.* E. Eischen. Ann. Math. Qué. 40 (2016), no. 1, 55–82. http://dx.doi.org/10.1007/s40316-015-0049-z
- *p-adic q-expansion principles on unitary Shimura varieties.* A. Caraiani, E. Eischen, J. Fintzen, E. Mantovan, and I. Varma. Directions in Number Theory: Proceedings of the 2014 WIN3 Workshop. Springer International Publishing (2016), 197–243.
  http://dx.doi.org/10.1007/978-3-319-30976-7_7
- *A p-adic Eisenstein measure for unitary groups.* E. Eischen. J. Reine Angew. Math. 699 (2015), 111–142. http://dx.doi.org/10.1515/crelle-2013-0008
- *A p-adic Eisenstein measure for vector-weight automorphic forms.* E. Eischen. Algebra Number Theory. 8 (2014), No. 10, 2433–2469.
  http://dx.doi.org/10.2140/ant.2014.8.2433
- *p-adic differential operators on automorphic forms for unitary groups.* E. Eischen. Ann. Inst. Fourier (Grenoble). 62, No. 1 (2012), 177–243.
  http://dx.doi.org/10.5802/aif.2704
- *Decomposition of almost complete tripartite graphs into two isomorphic factors of fixed diameter.* E. Eischen. Discrete Math. 306 (2006), 745–761.
  http://dx.doi.org/10.1016/j.disc.2006.02.009
- *Patterns, linesums, and symmetry.* E. Eischen, C. Johnson, K. Lange, and D. Stanford. Linear Algebra Appl. 357 (2002), 273–289.
  http://dx.doi.org/10.1016/S0024-3795(02)00417-2

- **PhD dissertation**
  - *p-adic differential operators on automorphic forms for unitary groups.* E. Eischen. PhD dissertation. University of Michigan, 2009. 130 pages. http://deepblue.lib.umich.edu/bitstream/2027.42/63860/1/eeischen_1.pdf.

- **Non-technical articles I was invited to write for the broader community**
  - *Moving Ahead in Your Research.* E. Eischen. Early Career section of the Research Issue of the *Notices of the American Mathematical Society*, February 2019. http://dx.doi.org/10.1090/noti1791.
  - *Improv-ing a Mathematician's Professional Skills.* E. Eischen. MAA FOCUS. Dec 2016/Jan 2017. Vol. 36, No. 6, 22–24. http://bit.ly/2ikwVg9.
  - *5 Key Takeaways from the Innovations Lab.* E. Eischen. August 2015. http://bit.ly/2igAjwK. Report on the first NIH/NSF Innovations Lab collaborative research workshop.

Funding Awarded

Unless otherwise indicated, I am the sole PI on each grant listed below.

- **National Science Foundation grants awarded**
  - NSF Grant DMS-1751281, $400,000, CAREER grant, 2018–2023
  - NSF Grant DMS-1559609, $135,000, number theory research grant, 2015–2019
  - NSF Grant DMS-1249384, $98,035, number theory research grant, 2012–2015
  - NSF Grant DMS-1557642, $100,000 ($19,500 to E. Eischen, with rest divided among other PIs: B. Chapman, D. Gotz, R. Hageman Blair, M. Jacob), QuBBD (Quantitative Approaches to Biomedical Big Data) grant through NIH Big Data to Knowledge (BD2K) initiative in partnership with the NSF Division of Mathematical Sciences, 2015–2017
  - NSF Grant DMS-1601959, $22,840, number theory conference grant, 2016–2017
- **Additional funding awarded**
  - Williams Fund, $7,530, University of Oregon, 2019–2021
  - Awarded NSA-AMS Young Investigators Award (declined, to accept NSF grant), 2015
  - Awarded Simons Collaboration Grant (declined, to accept NSF grant), 2015
  - Served as faculty advisor on Kenan-Biddle Grant, $5,460, led by student organizers H. Diaz, C. Hsu, and D. Muckerman, UNC and Duke University, 2015
  - US Junior Oberwolfach Fellow, 450 euros, July 2014
  - Junior Faculty Development Award, $7,500, UNC, 2013
  - AWM-NSF Travel Grant, $1,087, Association for Women in Mathematics, June 2012
  - Bell Labs (Lucent Technologies) Graduate Research Fellowship, $152,416.21, 2003–2008

Honors and Awards

- Excellence in Remote Teaching Award, University of Oregon, 2020
- Excellence in Teaching Award, Northwestern University Mathematics Department, 2011
- *Phi Kappa Phi* (awarded to top 10% of grad students at University of Michigan), 2008
- *Phi Beta Kappa*, Princeton University, 2003
- The Peter A. Greenberg '77 Prize (awarded to a senior "for outstanding accomplishments in mathematics"), Princeton University, 2003
- *Sigma Xi* (research honor society), Princeton University, 2003

Upcoming and Recent Presentations

- **Invited lecture series**
  - Arizona Winter School, March 2022 (4 lectures on automorphic forms beyond GL_2)
  - Iwasawa 2019, Bordeaux, France, June 2019 (4 lectures on p-adic L-functions)
  - Introductory Workshop on Euler Systems and Special Values of L-functions, EPFL, Switzerland, 2017 (3 lectures on p-adic L-functions)
- **Invited research talks during past 6 years**

  Talks since March 2020 are remote, due to the pandemic.
  - Colloquium, Penn State, February 2021
  - Conference on automorphic forms, automorphic representations, Galois representations, and related topics, RIMS, Kyoto, Japan, January 2021
  - Colloquium, University of Arizona, October 2020
  - Conference on Serre Weights Conjectures and Geometry of Shimura Varieties, Centre de Recherches Mathématiques, Montréal, Canada, September 2020
  - Pacific Rim Conference in Mathematics, UC Berkeley, August 2020
  - Colloquium, Rice University, February 2020
  - Joint Colloquium, Harvard University, November 2019
  - Algebra and Number Theory Seminar, Brown University, November 2019
  - Automorphic p-adic L-functions and Regulators conference, Lille, France, October 2019
  - Heilbronn Number Theory Seminar, University of Bristol, England, October 2019
  - AMS special session on Recent Developments in Automorphic Forms (45-minute talk), Spring Central and Western Joint Sectional Meeting, University of Hawaii, March 2019
  - AMS special session on Advances in Iwasawa Theory, Spring Central and Western Joint Sectional Meeting, University of Hawaii, March 2019
  - Number Theory Seminar, Caltech, November 2018
  - Workshop on Special Values of Automorphic L-functions and Associated p-adic L-Functions, BIRS-CMO, Oaxaca, Mexico, October 2018
  - Number Theory Seminar, Stanford University, May 2018
  - BC-MIT Number Theory Seminar, MIT, May 2018
  - Bellairs workshop on Unitary Shimura Varieties & Modular Forms, Barbados, May 2018
  - Number Theory Seminar, University of Chicago, March 2018
  - Paul J. Sally Midwest Representation Theory Conference in honor of Freydoon Shahidi's 70th birthday, Purdue University, October 2017
  - Colloquium, University of Southern California, September 2017
  - Special Cycles on Shimura Varieties and Iwasawa Theory conference, EPFL, Switzerland, August 2017
  - Mathematical Congress of the Americas, special session on Galois Representations and Automorphic Forms, Montreal, Canada, July 2017

Invited Research Talks During Past 6 Years, continued

- The Quebec-Vermont Number Theory Seminar, McGill University, May 2017
- Special session on Automorphic Forms and Arithmetic, AMS sectional meeting, New York, NY, May 2017
- Number Theory Seminar, Caltech, March 2017
- Number Theory Seminar, Oregon State University, October 2016
- Clay Mathematics Institute workshop on Recent Developments on Elliptic Curves, Mathematical Institute of the University of Oxford, England, September 2016
- Plenary speaker, Galois Representations and Automorphic Forms Conference, Bedlewo, Poland, August 2016
- Topic contributed paper session on The NSF/NIH/SAMSI Workshop on Interdisciplinary Approaches to Biomedical Data Science Challenges, JSM, Chicago, August 2016
- Invited lecture, Canadian Number Theory Association Conference (CNTA XIV), University of Calgary, Canada, June 2016
- Number Theory Seminar, University of Chicago, May 2016
- Number Theory Seminar, Northwestern University, May 2016
- Plenary lecture, Alberta Number Theory Days, Banff International Research Station, Canada, April 2016
- Southern California Number Theory Day, UCSD, February 2016
- Number Theory Seminar, UCLA, February 2016
- Special session on Number Theory and Cryptography, JMM, Seattle, January 2016
- AMS special session on The Langlands Program and Related Topics, Central Fall Sectional Meeting, Loyola University, Chicago, October 2015
- Pacific Northwest Number Theory Conference, Eugene, Oregon, May 2015
- Philadelphia Area Number Theory Seminar, Bryn Mawr College, April 2015
- Colloquium, University of Washington, January 2015
- Special session on Recent Developments in Algebraic Number Theory, JMM, San Antonio, TX, January 2015

- **Invited expository talks (for students, etc) during past 6 years**
  - Open Neighborhood Seminar, Harvard University, November 2019
  - Applied Science Program, The Pennington School, NJ, September 2019
  - REU, Oregon State University, July 2019
  - Faculty Perspectives, IntroDUCKtion, U. Oregon, June 2018 and July 2019
  - The North Star Lectures, University of Oregon, May 2019
  - Undergraduate Math Club, Occidental College, Los Angeles, November 2018
  - Colloquium, Reed College, October 2018
  - College Scholars Freshman Colloquium, U. Oregon College of Arts & Sciences, Feb. 2016
  - Distinguished Lecture for Students, MAA Southeastern Section Meeting, March 2015

- **Poster presentations during past 6 years**
  - Selected to co-present poster at NSF/NIH Big Data to Knowledge (BD2K) All Hands Grantee Meeting, Bethesda, Maryland, November 2016
    (Co-presented with R. Hageman Blair.)
  - Presented poster at NSF/NIH Big Data to Knowledge (BD2K) All Hands Grantee Meeting, NIH, Bethesda, Maryland, November 2015
    (Co-presented with R. Hageman Blair, B. Chapman, and D. Gotz.)

Participation in Collaborative Research Workshops

- Leader of a project associated with my lectures at the Arizona Winter School, March 2022
- SQuaRE collaborative research meeting on an algebraic number theory project, American Institute of Mathematics, San Jose, CA, October 2021
- SQuaRE collaborative research meeting on an algebraic number theory project, American Institute of Mathematics, San Jose, CA, January 2018
- Selected participant at the NSF/NIH "Data Science Innovation Lab 2016: Mobile Health," UCLA Lake Arrowhead Conference Center, June 2016
- Selected participant at the NSF/NIH/SAMSI Innovation Lab on "Interdisciplinary Approaches to Biomedical Data Science Challenges," SAMSI, Raleigh, North Carolina, July 2015
  To learn more, see the blogpost I was invited to write for SAMSI's blog:
  `http://samsiatrtp.wordpress.com/2015/08/14/5-key-takeaways-from-the-innovations-lab/`
- Collaborated with (and co-organized) Focused Research Group on "Geometric aspects of p-adic automorphic forms," Banff International Research Station, Banff, Canada, October 2014
- Designed and led research project in number theory (co-leader: A. Caraiani) at WIN3, Banff International Research Station, Banff, Canada, April 2014

Teaching Record During Past 6 Years

- **Course development**
  - Designed Math and the Creative Process: A Participatory Exploration of Number Theory, undergraduate course Math 199, first offered in Spring 2020
    `https://pages.uoregon.edu/eeischen/CreativityCounts/course/`
- **Courses taught during past 6 years through future**
  - Graduate Algebraic Number Theory (Math 607), U. Oregon,
    2-quarter sequence, fall 2020 and winter 2021
  - Math and the Creative Process: A participatory exploration of number theory (Math 199), U. Oregon, spring 2020 (new course I developed and designed from scratch: `https://pages.uoregon.edu/eeischen/CreativityCounts/course/`)
  - Introduction to Abstract Algebra III (Math 445/545), U. Oregon, winter 2020
  - Graduate Algebraic Number Theory (Math 607), U. Oregon,
    2-quarter sequence, winter and spring 2019

Courses Taught During Past 6 Years, continued

- Introduction to Abstract Algebra (Math 444/544, 445/545, 446/546), U. Oregon, 3-quarter sequence 2017–2018
- Introduction to Abstract Algebra III (Math 446/546), U. Oregon, spring quarter 2017
- Linear Algebra (Math 441/541), U. Oregon, spring quarter 2017
- Mathematical Methods of Statistics I (Math 461/561), U. Oregon, fall quarter 2016
- Introduction to Mathematical Cryptography (Math 458), U. Oregon, spring quarter 2016
  Scavenger hunt: `http://www.elleneischen.com/cryptography-scavenger-hunt.html`
- Multivariable Calculus: Integration (Math 282), U. Oregon, winter quarter 2016
- Multivariable Calculus: Differentiation (Math 281), U. Oregon, fall quarter 2015
- Algebra (Math 677), UNC, spring semester 2015
- Algebraic Structures (Math 578), UNC, spring semester 2015

- **Reading courses**

  I supervise graduate reading courses nearly every term.

Supervising Record

- **Postdoctoral scholars supervised**
  - Maria Fox, Paul Olum Postdoctoral Scholar, U. Oregon, 2019–2022
  - Vivek Pal, Postdoctoral Scholar in Number Theory, U. Oregon, 2016–2017

- **PhD dissertations supervised**
  - Sean Haight, University of Oregon, current PhD student
  - Jon Aycock, University of Oregon, current PhD student
    *Awarded UO College of Arts and Sciences Dissertation Research Fellowship, 2020–2021 (1 of 4 awarded across all the natural sciences departments)
  - Catherine Hsu, University of Oregon, PhD 2018
    First position: Heilbronn Research Fellow, University of Bristol (England), 2018–2020
    Present position: Visiting Assistant Professor, Swarthmore College, Fall 2020–present
    *Awarded the UO Doctoral Research Fellowship (the university's most prestigious fellowship, awarded to 1 student university-wide), AAUW American Dissertation Fellowship, AWM's Most Outstanding Graduate Student Research Poster award JMM 2017

- **Masters project supervised**
  - Catherine Hsu, The University of North Carolina at Chapel Hill, 2015

- **Undergraduate students supervised**
  - Robert Macy, data science project, University of Oregon, spring 2016
    Graduate school: University of Michigan's computer science program
  - Max Dickinson, data science project, University of Oregon, spring 2016
  - Heidi van Batenburg-Stafford, senior honors thesis, Northwestern University, 2012

Editorial Work and Reviewing During Past 6 Years

- Member of Editorial Board for the research journal *Research in Number Theory*, 2020–present `https://www.springer.com/journal/40993/editors`
- Co-editor of *Directions in Number Theory: Proceedings of the 2014 WIN3 Workshop*. Springer International Publishing (2016). `http://dx.doi.org/10.1007/978-3-319-30976-7`
- Reviewer for funding agencies and research journals (more information available upon request)

Conference and workshop organization

- Co-organizing (with H. Darmon, B. Howard, D. Loeffler, C. Skinner, S. Zerbes, W. Zhang) semester program on Euler Systems and Special Values of L-functions, MSRI, Spring 2023
- Co-organizing (with H. Darmon, B. Howard, E. Mantovan) Introductory Workshop on Euler Systems and Special Values of L-functions, MSRI, Spring 2023
- Co-organizing (with H. Darmon, B. Howard, E. Mantovan) Connections for Women on Euler Systems and Special Values of L-functions, MSRI, Spring 2023
- Organizing 2 weeklong workshops: collaborative research workshop to promote diverse collaborations and instructional workshop on recent developments, U. Oregon, July 2022 `https://sites.google.com/view/automorphic2021`
- Co-organizing (with S.W. Shin, L. Xiao) session on number theory and arithmetic geometry at the Pacific Rim Mathematical Association Congress, Vancouver, Canada, December 2021
- Co-organizing (with D. Barrera Salazar, L. Alberto Lomelí, A Pacetti, C. Sorensen) session on Galois representations and automorphic forms, Mathematical Congress of the Americas, Buenos Aires, Argentina, July 2021
- Co-organizing (with M. Dimitrov, A. Jorza) weeklong instructional workshop and weeklong conference on p-adic L-functions and eigenvarieties, Notre Dame, June 2021
- Co-organized (with J. Kamnitzer, A. Kontorovich, K. Stange) Illustrating Algebra and Number Theory workshop, week-long workshop as part of the semester-long ICERM program Illustrating Mathematics, Brown University, Providence, RI, October 2019
- Co-organized (with Y. Liu, L. Xiao, W. Zhang) AMS Special Session on Special Values of L-functions and Arithmetic Invariants in Families, Spring Eastern Sectional Meeting, University of Connecticut, Hartford, CT, April 2019
- Co-organized (with A. Bucur) the AMS/MAA Joint Mathematics Meetings AWM Workshop (special session on number theory), Atlanta, GA, January 2017
- Co-organized (with J. Rouse, K. Thompson) the 30th Automorphic Forms Workshop, Wake Forest University, Winston-Salem, NC, March 2016

Select Service During Past 6 Years

For editorial work, reviewing, and conference/workshop organization, see previous page.

- **National committees**
  - Appointed to AMS Liaison Committee with the American Association for the Advancement of Science (AAAS), 2020–2022
  - Appointed to AMS Committee on the Profession, 2020–2023
    -Subcommittee to analyze the report from Committee on Professional ethics (COPE)
  - Served on AWM Joint Mathematics Meetings committee, 2016
- **University committees**
  - Member of Search Committee for Director of McNair Scholars Program, UO, Fall 2018
  - Served on UNC's selection committee for Rhodes & Marshall Scholarships, August 2014
- **Department committees**
  - Faculty supervisor, Oregon Undergraduate Mathematics Club, 2018–present
  - Graduate Advising Committee, UO Math Department, 2019–2021
  - PhD Committee, UO Math Department, 2019–2020
  - Open Tenure-Track Search Committee, UO Math Department, 2018–2019
  - Executive Committee, UO Math Department, 2018–2019
  - Graduate Affairs Committee, UO Mathematics Department, 2018–2019
  - PhD Comprehensive Exam Committee (responsible for writing and grading algebra comprehensive exams), UNC, Summer 2013 to Winter 2015
- **Thesis and dissertation committees**
  - Math graduate students' PhD committees (for PhD students Jon Aycock, Corey Brooke, Christophe Dethier, Sean Haight, Catherine Hsu, Sarah Frei, Greg Knapp, Leila Vaden), Oregon, 2015–present
  - Outside committee member for 2 UO Chemistry Department PhD candidates (Jenna Mancuso, Augie Witkowski), 2018–present
  - Outside committee member for UO Computer Science Department PhD candidate (Nicole Marsaglia), 2020
  - Committee member for senior theses (Sasha Shmakov, UO Math Department; Sam Calvert, UO Honors College), 2018
- **Seminar organization at the University of Oregon**
  - Started and organize The Oregon Distinguished Mathematics Lectures for Students, U. Oregon, 2015–present (website: `http://blogs.uoregon.edu/mathisawesome/`)
  - Co-organized (as committee chair) the Niven and Moursund Distinguished Lectures, U. Oregon, 2017–2018
  - Co-organize the University of Oregon Number Theory Seminar, 2016–present

Additional significant outreach and educational activities

Additional activities in which I have taken a leadership role or contributed substantial time

- **Museum exhibit**
  - Organizing exhibit *Creativity Counts: Possibilities Shaped by Constraints of Arithmetic* to share the beauty of mathematics with the public, opening Spring 2021 at the Jordan Schnitzer Museum of Art
    `https://pages.uoregon.edu/eeischen/CreativityCounts/`
- **Integrating principles of improv to build community in undergraduate classes**
  - Collaborating with Heather Barnes (Improv@Work, Second City, Museum of Science and Industry, Shedd Aquarium), consultant on my NSF CAREER grant, on adapting tools from improv for STEM pedagogy and communication, 2018–present
  - Panelist on webinar Building a Community of Learners (in remote math classes), TPSE/ AMATYC, August 2020 `https://www.youtube.com/watch?v=P_EhnoK8_Ms`
  - Design remote and in-person workshops on improv exercises for building community and engagement in undergraduate classes, e.g. *Whose Math Is It Anyway? Interactive Engagement in Remote Classes* (Bowling Green State University), *Engaging Students and Building Community in Remote Classes* (Idaho State University), *Yes And! Improvisation as a Tool for Enhancing Teaching and Learning* (upcoming, joint with Barnes for UO's Teaching Engagement Program), 2019–present
- **STEM communication**
  - STEM penpal, Letters to a Prescientist (`https://www.prescientist.org`), 2019–2020
  - Participant, UO Science Literacy Program communication workshops, spring 2017
- **Reading room**
  - Spearheaded efforts to create reading room for women in math and facilitate reading room discussions about gender and math, U. Oregon, 2017–present

Other Appointments and Affiliations

- **Long-term visits (at least two weeks)**
  - Invited Research Fellow, program on Illustrating Mathematics, ICERM, fall 2019
  - Invited guest, Caltech, November–December 2018
  - Invited academic guest, special program on "Euler systems and special values of L-functions," EPFL, Switzerland, August and December 2017
  - Visiting Scholar, Columbia University, spring 2014 and 2006–2008 (except fall 2007)
  - Visiting Student Research Collaborator, Princeton University, 2008–2009

- **Other employment**
  - Graduate research fellow, Bell Labs (Lucent Technologies) Mathematical Sciences Research Center, Murray Hill, NJ, summer 2003
  - Researcher, The Duluth Undergraduate Mathematics Research Program, summer 2002
  - Intern, Applied Computer Science and Math Group, Merck Research Labs, Merck & Co, Rahway, NJ, summer 2001
- **Additional affiliations**
  - Faculty Affiliate, Phil and Penny Knight Campus for Accelerating Scientific Impact, U. Oregon, 2019–present
  - Faculty Affiliate, Center for the Study of Women and Society, U. Oregon, 2019–present

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Professional memberships

AMS, MAA, AAAS, AWM, NAM