Eric Stade
Professor, Department of Mathematics
President's Teaching Scholar
University of Colorado Boulder

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Education

- PhD in Mathematics, 1988, Columbia University.
- MA in Mathematics, 1984, Columbia University.
- BA in Mathematics, *magna cum laude*, 1983, Columbia University.

Employment

- *Academic.*
  - *July 2002–Present.* Professor of Mathematics, University of Colorado Boulder.
  - *July 1996– June 2002.* Associate Professor of Mathematics, University of Colorado Boulder.
  - *July 1990–June 1996.* Assistant Professor of Mathematics, University of Colorado Boulder.
  - *July 1988–June 1990.* John Wesley Young Research Instructor of Mathematics, Dartmouth College.
- *Other.*
  - *September 2012–June 2017.* Consulting mathematician to The Math Learning Center (MLC), Portland, Oregon.
    Consulted on the design of K5 mathematics curricular materials that emphasize conceptual and visual approaches.
  - *Fall 1996.* Consulting mathematician to O.R. Technology of Boulder, Colorado.
    Provided the mathematical modeling behind the design of a high-capacity computer disk drive (the "LS-120 SuperDisk" drive), and wrote a report, "A distribution-of-angles model for the HD sensor," documenting the work and conclusions.
  - *Summer 1981 and 1982.* Technical Staff at Bell Laboratories, Whippany, New Jersey.
    Coded (in FORTRAN), and provided documentation for, statistical studies of software reliability.

Major Administrative Roles

- *July 2024–Present.* Director of Graduate Studies, UC Boulder Department of Mathematics.
- *January–December 2022.* Director of First Year Programs, UC Boulder College of Arts and Sciences.

  Overseeing of seven Arts and Sciences Residential Academic Programs, as well as other First Year Experiences, including Living and Learning Communities.
- *July 2018–December 2021.* Executive Director of the Residential Academic Programs, UC Boulder College of Arts and Sciences.

  Overseeing of seven separate campus residential learning communities.
- *July 2016–December 2022.* Interim Director (for the first year) and Director (thereafter), Stories and Societies (formerly Sewall) Residential Academic Program, UC Boulder.

  Management of a residential learning community focused on history, storytelling, and society.
- *September 2019–September 2021.* Founder and Co-Chair of the College of Arts and Sciences Student Wellness Task Force, UC Boulder.

  A team of individuals from a variety of campus constituencies, all dedicated to student wellness and, in particular, mental health.
- *July 2011–June 2014.* Director, Libby Arts Residential Academic Program, UC Boulder.

  Management of a residential learning community focused on the visual and performing arts, and on creativity.
- *January 2007–June 2010.* Interim Chair (for the first semester) and Chair (for the remainder), UC Boulder Department of Mathematics.
- *April 2003–April 2004.* Chair of the Integrated Mathematics Committee (IMC).

  Subcommittee of the Colorado Commission of Higher Education, formed to study, and to make recommendations regarding, Math for Elementary Education courses throughout the state.
- *July 1996–June 2000.* Associate Chair for Undergraduate Studies, UC Boulder Department of Mathematics.

Publications

- *PhD Dissertation.* Whittaker Functions and Poincaré Series for $GL(3, \mathbb{R})$, Columbia University (1988).

- *Textbooks.*

1. *Fourier Analysis*, John Wiley & Sons, New York, 2005.
2. (with Elisabeth Stade) *Calculus: A Modeling and Computational Thinking Approach*, Springer Nature, 2023.

- *Refereed Journal Articles and Book Chapters: published.*

1. E. Stade, Poincaré series for $GL(3,\mathbb{R})$-Whittaker functions, *Duke Mathematical Journal* **58** (1989), #3, 131–165.
2. E. Stade, On explicit integral formulas for $GL(n,\mathbb{R})$-Whittaker functions, *Duke Mathematical Journal* **60** (1990), # 2, 313–362.
3. E. Stade, $GL(4,\mathbb{R})$-Whittaker functions and ${}_4F_3(1)$ hypergeometric series, *Transactions of the Amer. Math. Soc.* **336** (1993), #1, 253–264.
4. E. Stade, Hypergeometric series and Euler factors at infinity for L-functions on $GL(3,\mathbb{R})\times GL(3,\mathbb{R})$, *American Journal of Mathematics* **115** (1993), # 2, 371–387.
5. E. G. Layton and E. Stade, Generalized Fourier-grid R-matrix theory: a discrete Fourier-Riccati-Bessel approach, *Journal of Physics B: At. Mol. Opt. Phys.* **26** (1993), # 16, L489–L494.
6. E. Stade, The reciprocal of the beta function and $GL(n,\mathbb{R})$-Whittaker functions, *Annales de l'Institut Fourier* **44** (1994), # 1, 93–108.
7. E. G. Layton and E. Stade, Generalized discrete Fourier transforms: the discrete Fourier-Riccati-Bessel transform, *Computer Physics Communications* **85** (1995), # 3, 336–373.
8. E. Stade, Mellin transforms of Whittaker functions on $GL(4,\mathbb{R})$ and $GL(4,\mathbb{C})$, *Manuscripta Mathematica* **87** (1995), 511–526.
9. E. Stade and D. I. Wallace, Weyl's law for $SL(3,\mathbb{Z})\backslash SL(3,\mathbb{R})/SO(3,\mathbb{R})$, *Pacific Journal of Mathematics* **173**, (1996), # 1, 241–261.
10. E. Stade, The hyperbolic tangent and generalized Mellin inversion, *Rocky Mountain Journal of Mathematics* **29** (1999), # 2, 691–707.
11. E. Stade and Jennifer Taggart, Hypergeometric series, a Barnes-type lemma, and Whittaker functions, *Journal of the London Mathematical Society* **61** (2000), 133–152.
12. E. Stade, Mellin transforms of $GL(n,\mathbb{R})$ Whittaker functions, *American Journal of Mathematics* **123** (2001), #1, 121–161.
13. E. Stade, Archimedean L-factors on $GL(n)\times GL(n)$ and generalized Barnes integrals, *Israel Journal of Mathematics* **127** (2002), 201–220.
14. Taku Ishii and E. Stade, New formulas for $GL(n,\mathbb{R})$ Whittaker functions, *Journal of Functional Analysis* **244** (2007), # 1, 289–314.

15. Marc Formichella, Richard Green, and E. Stade, Coxeter group actions on ${}_4F_3(1)$ hypergeometric series, *Ramanujan Journal of Mathematics* **24**, #1 (2011), 93–128.

16. D. Goldfeld, A. Kontorovich, and E. Stade, On the Kontorovich-Lebedev Transform, *Commentarii Mathematici Universitatis Sancti Pauli* **60**, #1-2 (2012), 37–46.

17. Taku Ishii and E. Stade, Archimedean zeta integrals on $GL_n \times GL_m$ and $SO_{2n+1} \times GL_m$, *Manuscripta Mathematica* **141**, #3, 485–536 (2013).

18. D. Webb, E. Stade, R. Grover, Rousing Students' Minds in Postsecondary Mathematics: The Undergraduate Learning Assistant Model, *Journal of Mathematics Education at Teacher's College* **5**, #2 (2014), 39–48.

19. R.M. Green, I. Mishev, and E. Stade, Relations Among Complementary and Supplementary Pairings of Saalschutzian 4F3(1) Series, *Ramanujan Journal of Mathematics* **39**, #3 (2016), 647–679.

20. A. Hodge, E. Stade, C.S. York, and Janice Rech, TACTivities: Fostering Creativity through Tactile Learning Activities, *Journal of Humanistic Mathematics* **10**, #2 (2020), 377–390. `https://doi.org/10.5642/jhummath.202002.17`.

21. R.M. Green, I.D. Mishev, and E. Stade, Coxeter group actions and limits of hypergeometric series, *Ramanujan Journal* **53**, 607–651 (2020). `https://doi.org/10.1007/s11139-020-00249-y`.

22. R.N. Ronau, D.C. Webb, S.A. Peters, M.J. Mohr-Schroeder, and E. Stade, "Mathematical Preparation," chapter in book: *The Mathematics Teacher Education Partnership: The Power of a Networked Improvement Community to Transform Secondary Mathematics Teacher Preparation*, Information Age Publishing, 2020.

23. E. Stade and T. Trinh, Recurrence relations for Mellin transforms of $GL(n, \mathbb{R})$ Whittaker functions, *Journal of Functional Analysis* **280**, #2 (2021). `https://doi.org/10.1016/j.jfa.2020.108808`

24. D. Goldfeld, E. Stade, M. Woodbury, An orthogonality relation for $GL(4, \mathbb{R})$ (with an appendix by Bingrong Huang), *Forum of Mathematics, Sigma* **9**, #e47 (2021), 1–83. `https://doi.org/10.1017/fms.2021.39`

25. A. Hodge, E. Stade, and C.S. York, "TACTivities: A Way to Promote Hands-on, Minds-on Learning in a Virtual Learning Environment," chapter in book: Niess, Margaret L. and Henry Gillow-Wiles (eds.), *Handbook of Research on Transforming Teachers' Online Pedagogical Reasoning for Engaging K-12 Students in Virtual Learning* (2 Volumes). IGI Global, 2021. `https://doi.org/10.4018/978-1-7998-7222-1`

26. Dorian Goldfeld, Eric Stade, and Michael Woodbury, The functional equations of Langlands Eisenstein series for $\mathrm{SL}(n, \mathbb{Z})$, Science China Mathematics **66** (2023), #12, 2731–2748.

27. D. Goldfeld, E. Stade, and M. Woodbury, The first coefficient of Langlands Eisenstein series for $\mathrm{SL}(n, \mathbb{Z})$, *Acta Arithmetica* 214 (2024), 179–189. `https://doi.org/10.4064/aa230412-15-7`

28. D. Goldfeld, E. Stade, and M. Woodbury, An asymptotic orthogonality relation for $\mathrm{GL}(n, \mathbb{R})$, *Algebra and Number Theory* **19**, no. 11 (2025), 2185–2260. `https://doi.org/10.2140/ant.2025.19.2185`

- *Articles and Book Chapters: submitted or in progress.*

1. With Dorian Goldfeld and Michael Woodbury, Multiplicativity of Fourier coefficients of Maass forms for $\mathrm{SL}(n, \mathbb{Z})$, submitted.
2. With Dorian Goldfeld and Michael Woodbury, Degenerate Whittaker functions for $\mathrm{GL}(n, \mathbb{R})$, in progress.
3. With Angie Hodge-Zickerman and Cindy York, Creating TACTivities: A comprehensive guide to designing tactile mathematical learning experiences. Chapter in Book: From Seeds to STEMs–a Guide to Nurture Mathematical Creativity from Theoretical Perspectives to Instructional Practices, in progress.
4. With Jennifer Banas, Liza Bondurant, Angie Hodge-Zickerman and Cindy York, Instructor and Student Perceptions of TACTivities: A Study of Active Learning in Precalculus, submitted.

Awards and Honors

- *2018.* Recipient of the American Mathematical Society's Award for Impact on the Teaching and Learning of Mathematics. (National award.)
- *2015.* Recipient of a UC Boulder Best Should Teach Gold Award.
- *2015.* Appointed Fellow of the International Society for Design and Development in Education (ISDDE).
- *2013.* Recipient of an ASSETT (Arts and Sciences Support of Education Through Technology) Award of Excellence for Technology in Teaching. (UC Boulder internal award.)
- *2013.* Recipient of a UC Boulder Faculty Assembly Excellence Award in Service and Leadership.
- *2011.* Lifetime designation as President's Teaching Scholar, University of Colorado.
- *2010.* Recipient of the Mathematical Association of America Rocky Mountain Section's Burton W. Jones Award for Distinguished College or University Teaching of Mathematics. Regional award.
- *2006.* Recipient of Departmental Teaching Award, UC Boulder Department of Mathematics, January 2006.

Grant Activity

- *Outreach. 2006–2018.* Awarded approximately $70,000 total in outreach funds from the UC Boulder Outreach Committee, to facilitate various partnerships where UC Boulder students engage with Boulder Valley School District K12 students in mathematics teaching and learning.
- *Mathematics Education.*
  - *10/13–03/15.* Co-PI on an $82,000 award from the Helmsley Charitable Trust, to promote Active Learning in college mathematics.
  - *05/03–12/03.* Awarded $66,452 from the Colorado Commission on Higher Education for the statewide curriculum initiative "Integrated Mathematics Course: Improving Future Elementary School Teachers' Mathematics Skills and Practices."
- *University Service. Academic Year 2007–2008.* Awarded $14,000 from the UC Boulder LEAP (Leadership Education for Advancement and Promotion) program, to fund initiatives for improving mathematics Departmental culture.
- *Mathematics Research. 07/94–06/97.* Awarded $47,500 from the National Science Foundation for the research program entitled "The Ramanujan Conjecture for $\Gamma\backslash GL(n,\mathbb{R})/(O(n,\mathbb{R})\cdot \mathbb{R}^*)$."

Courses taught

Spirit and Uses of Mathematics (Math for Elementary Education) I and II; Calculus with Algebra; Calculus with Analytic Geometry I; Honors First Semester Calculus; Calculus, Systems, and Modeling (also known as Calculus for Life Sciences); Introduction to Discrete Mathematics; Calculus with Analytic Geometry II; Introduction to Statistics; Differential Equations; Introduction to the Theory of Numbers; Introduction to Abstract Mathematics; Introduction to Probability and Statistics; Introduction to Probability Theory; Analysis I; Introduction to Algebra; Introduction to Topology; Seminar In Guided Mathematics Instruction; Functions of a Complex Variable; Fourier Analysis; Seminar in Riemann Surfaces; Independent Study (undergraduate and graduate level—subjects included Number Theory, Topics in Fourier Analysis, and Remote Sensing); Mathematics Teacher Training; Graduate Theory of Numbers I; Graduate Algebra I; Graduate Analytic Number Theory; Graduate Topology I and II; Graduate Real Analysis I; Graduate Complex Variables II; Modular Forms; Topics in Number Theory.

Student supervision

Principal thesis advisor to twelve PhD students (nine completed; three in progress) in Mathematics. Principal thesis advisor to ten MA students in Mathematics. Principal thesis advisor

to two Undergraduate Honors students in Mathematics. Member of Doctoral Dissertation committee for roughly thirty additional graduate students in Mathematics, one in Physics, and one in the School of Education. Member of Master's Thesis committee for roughly twenty graduate students in Mathematics. Member of Comprehensive Exam committee for roughly 40 graduate students in Mathematics, and one in Electrical Engineering. Member of Undergraduate Honor's Thesis committee for three students in Physics and one in EPO Biology.

Additional notes

- *Course and Curriculum Design and Development.*
  - *University of Colorado Boulder:*
    - Developed and recorded a lecture entitled "How do we model the spread of disease mathematically?" for the one-credit CU course "Health, Society, and Wellness in COVID-19 Times." Also recorded a Q&A podcast to complement the lecture.
    - Member of the design team for ARSC 1550: Making of the Self (new Arts and Sciences College-wide "CU 101" course).
    - Introduction of outreach components to our Mathematics for Elementary Education course sequence.
    - Introduction of Active and Inquiry-Based Learning approaches to Calculus courses.
    - Development of MATH 1310: Calculus for Life Sciences.
    - Development of MATH 1150: Precalculus Mathematics.
    - Development of Teacher Training courses for graduate Teaching Assistants and undergraduate Learning Assistants.
    - Creation of a course in Fourier Analysis.
    - Development of a Secondary Education Track for our Mathematics Major.
    - Development of Five-Year Concurrent BA/MA and BA/MS programs in Mathematics.
    - Development, as Director of the Libby Arts Residential Academic Program, of a curriculum focusing on art and on creativity across academic disciplines.
  - *Throughout Colorado:* Redesign of MAT 155/156 (Integrated Mathematics I and II), the required math content sequence for all Colorado Community College students seeking licensure in Elementary Education.
  - *Nationally:* Founding member of the national MTEP (Mathematics Teacher Education Partnership) initiative, and of BOALA (the Boulder-Omaha Active Learning Alliance). Helped design national models and curricula for college-level secondary mathematics teacher training programs. Worked to develop and promote new content and pedagogy paradigms for first-year calculus.

- *Talks.*

- *Outreach.* "Fibonacci Numbers and The Golden Ratio: why can't we all just get along?," CU Wizards community lecture series presentation. Delivered to audiences of about 400 middle school students and their families/guardians (March 2009, April 2011, February 2013, April 2016).
- *Mathematics Research.* Numerous talks on original research in Number Theory delivered around the country and in Japan.
- *Mathematics Education.* Numerous talks on Active and Inquiry-Based Mathematics Teaching and Learning delivered around the country and in Japan.

- *Other service activities.* At various times during my career, I have served in the following capacities.
  - *To the University of Colorado Boulder Department of Mathematics:*
    * Member of Learning Assistant Selection Committee.
    * Chair of Awards Committee.
    * Chair of Outreach Committee.
    * Member of Executive Committee.
    * Member of Undergraduat Committee.
    * Member of Graduate Committee.
    * Member of Task Force on Evaluation, Reappointment, Promotion, and Tenure.
    * Chair and/or Member of Graduate Algebra Prelim Exam Committee.
    * Chair and/or Member of Graduate Analysis Prelim Exam Committee.
    * Member of Graduate Topology Prelim Exam Committee.
    * Chair and/or Member of Primary Unit Evaluation Committee for various cases of Instructor Reappointment, Assistant Professor Comprehensive Review, Tenure and Promotion to Associate Professor, and Promotion to Full Professor.
    * Member of various Assistant Professor Search Committees.
  - *To the CU Boulder College of Arts and Sciences and the Campus:*
    * Co-founder and co-Chair, Arts and Sciences Health and Wellness Task Force.
    * Member, First Year Experience Transitions Committee.
    * Member, Academic Program Allocation Task Force.
    * Founding Fellow and Project Manager for Mathematics, CU Boulder Center for STEM Learning.
    * Member of the Provost's First Year Advisory Board.
    * Member of ARISE: Arts and Sciences RAPs Inclusivity Seed Empowerment (A&S RAP Diversity Committee).
    * Member of the College of Arts and Sciences Student Success Team.
    * Member of the Boulder Faculty Assembly Instructor-Track Faculty Affairs Committee.

- Member of the College of Arts and Sciences Instructor Task Force.
- Member of Search Committee for Assistant Dean of Academic Advising.
- Member of Arts and Sciences Personnel Committee.
- Member of Provost's First Year Experience Transitions Committee.
- Chair of the First Year Seminar Review Panel.
- Member of School of Education Committee on Promotion and Tenure.

- *To the broader mathematics community:*
  - Co-organizer of the 2011 the Mathematical Association of America Rocky Mountain Section Annual Meeting, Boulder, Colorado.
  - Founding Member, Member of the Planning Committee, and co-chair of the *Actively Learning Mathematics* Research Action Cluster, for the Mathematics Teacher Education Partnership (MTEP), an initiative of the Association of Public and Land-grant Universities (APLU).
  - Member of the Boulder Area STEM Education Coalition (BASEC).
  - Member of the UC Boulder Leadership Team for APLU-SMTI (the Association of Public and Land-Grant Universities' Science and Mathematics Teacher Imperative).
  - Member of the American Mathematical Society's Committee on the Profession.
  - Referee on about twenty grant proposals for the National Science Foundation Division of Mathematical Sciences (Algebra and Number Theory Program).
  - Referee on about thirty articles for professional Mathematics journals.
  - Author of about twenty reviews published in *Mathematical Reviews*.
  - Reviewer of six book proposals for John Wiley and Sons.