Edna Jones

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Academic Appointments

- **National Science Foundation (NSF) Mathematical and Physical Sciences Ascending Postdoctoral Research Fellow** (Aug. 2024–present)
  Tulane University, New Orleans, Louisiana
- **Phillip Griffiths Assistant Research Professor of Mathematics** (Aug. 2022–Aug. 2024)
  Duke University, Durham, North Carolina

Education

- **Ph.D. in Mathematics** (Oct. 2022)
  Rutgers, The State University of New Jersey, New Brunswick, New Jersey
  – Advisor: Alex Kontorovich
- **Bachelor of Science, Mathematics**; Minor: Computer Science (Nov. 2015)
  Rose-Hulman Institute of Technology, Terre Haute, Indiana
  – Summa Cum Laude

Research Interests

analytic number theory, the circle method, quadratic forms

Selected Honors & Awards

- National Science Foundation (NSF) Mathematical and Physical Sciences Ascending Postdoctoral Research Fellowship (MPS-Ascend) (2024–present)
- Project NExT Fellow (Green '23 Cohort) (2023–2024)
- Rutgers School of Arts and Sciences (SAS) Excellence Fellowship (2020–2022)
- NSF Graduate Research Fellowship (2017–2020)
- Rutgers Graduate School Fellowship for doctoral study in Mathematics (2016–2017)
- Clarence P. Sousley Award (2016)
  – Awarded to a graduating senior mathematics major at Rose-Hulman
- Ranked 371.5 (out of 4320) on William Lowell Putnam Mathematical Competition with a score of 30 (2014)
- Henry Turner Eddy Award — Pure Math (2014)
  – Awarded to a student completing the junior year at Rose-Hulman as a mathematics major or double major including mathematics
- U.S. Presidential Scholar (2011)

Mathematical Research Publications & Preprints

6. Edna Jones. "The Kloosterman circle method and weighted representation numbers of quadratic forms." *Research in the Mathematical Sciences*, vol. 12, no. 3, article no. 59, 2025, pp. 1–78,

https://doi.org/10.1007/s40687-025-00544-4.

5. Alexandra Florea, Edna Jones, and Matilde Lalín. "Moments of Artin-Schreier L-functions." *The Quarterly Journal of Mathematics*, vol. 75, no. 4, 2024, pp. 1255–1284, https://doi.org/10.1093/qmath/haae045.
4. Edna Jones. "Local Densities of Diagonal Integral Ternary Quadratic Forms at Odd Primes." *Special Issue II: In Honor of Bruce Berndt's 80th Birthday*, special issue of *International Journal of Number Theory*, vol. 17, no. 3, 2021, pp. 547–575, https://doi.org/10.1142/S1793042120400357.
3. Sheng Bau, Peter Johnson, Edna Jones, Khumbo Kumwenda, and Ryan Matzke. "Rainbow Connectivity in Some Cayley Graphs." *The Australasian Journal of Combinatorics*, vol. 71, no. 3, 2018, pp. 381–393.
2. William Linz and Edna Jones. "r-Completeness of Sequences of Positive Integers." *INTEGERS: Electronic Journal of Combinatorial Number Theory*, vol. 16, A59, 2016, pp. 1–8.
1. Edna Jones and John Ryan. "Theoretical Friends of Finite Proximity." *International Journal of Mathematics and Computer Science*, vol. 10, no. 2, 2015, pp. 205–226.

Other Publications & Preprints

2. Kathleen Melhuish, Lino Guajardo, Kristen Lew, Paul C. Dawkins, Alexander Diaz-Lopez, Rebecca Garcia, Pamela E. Harris, Edna Jones, Priyam Patel, Kyeong Hah Roh, Shanise Walker, Dwight Anderson Williams II, and Aris Winger. "Diverse storylines of entering the mathematics professoriate." *Educational Studies in Mathematics*, vol. 121, 2026, pp. 457–476, https://doi.org/10.1007/s10649-025-10476-z.
1. Contributor to the *An ON-RAMP to Proof: An Exploration of Interesting Proofs and the Authors Who Shared Them.* Edited by Paul Christian Dawkins, Kristen Lew, Kathleen Melhuish, Kyeong Hah Roh, Norman Contreras, and Lino Guajardo. Draft available at https://zenodo.org/records/17868047.

Teaching Experience at the College Level

- **Instructor** for the Department of Mathematics at Duke University, Durham, NC
  - MATH/STA 230—Probability (Spring 2024)
    - Sole instructor for 2 classes of about 40 students
    - Wrote syllabi, exams, quizzes, and homework problem sets on probability
    - Incorporated active learning activities in lectures
    - Delegated some grading responsibilities to graders
    - Co-supervised probability help room teaching assistants
  - Math 371—Combinatorics (Fall 2022 & Fall 2023)
    - Sole instructor for classes of about 30 students
    - Wrote syllabi, exams, quizzes, and homework problem sets on combinatorics
    - Incorporated active learning activities in lectures
    - Delegated some grading responsibilities to a grader
- **Instructor / Supervising Faculty** for the Department of Mathematics at Duke University, Durham, NC
  - Math 393—Research Independent Study (Spring 2024)
    - Topic: Digit sums on graphs
    - Supervised an undergraduate student in doing mathematical research and in writing

a math paper
    - Taught some topics in linear algebra, abstract algebra, and modular arithmetic
    - Taught about mathematical research and writing
- **Instructor** for the Department of Mathematics at Rutgers University, New Brunswick, NJ
  - Math 250—Introductory Linear Algebra (Summer 2019)
    - Sole instructor for a class of 15 students
    - Wrote syllabus, exams, quizzes, and homework problem sets on linear algebra
    - Incorporated active learning activities in lectures
    - Delegated some grading responsibilities to a grader
  - Math 477—Mathematical Theory of Probability (Summer 2018)
    - Sole instructor for a class of 26 students
    - Wrote syllabus, exams, quizzes, and homework problem sets on probability
    - Incorporated active learning activities in lectures
    - Delegated some grading responsibilities to a grader
- **Discussion Section Leader** for the Department of Mathematics at Duke University, Durham, NC
  - Math 218D-1—Matrices and Vector Spaces (Spring 2023)
    - Facilitated group discussions on homework problems
    - Wrote and graded quizzes
- **Course Assistant** for the Arizona Winter Semester 2021 for the course "A friendly introduction to the theory of modular forms" (Jan.–Mar. 2021)
    - Facilitated problem discussion meetings over Zoom
    - Collaborated with lecturer and other course assistants to create problem sets
- **Teaching Assistant** for the Department of Mathematics at Rutgers University, New Brunswick, NJ
  - Math 115—Precalculus College Mathematics (Fall 2019)
    - Ran flipped recitations sessions for a Precalculus College Mathematics course for engineering majors
    - Wrote and graded quizzes
  - Math 152—Calculus II for the Mathematical and Physical Sciences (Fall 2017)
    - Facilitated group discussions on workshop problems
- **Lab Assistant** for the Department of Computer Science and Software Engineering (CSSE) at Rose-Hulman Institute of Technology, Terre Haute, IN (Spring 2012)
    - Assisted students with coursework in the CSSE Department computer lab
- **Grader** at Rose-Hulman Institute of Technology, Terre Haute, IN
  - CSSE/MA 474—Theory of Computation (Winter 2015–2016)
  - MA 275—Discrete & Combinatorial Algebra I (Fall 2014)
  - CSSE 220—Object-Oriented Software Development (Winter 2011–2012)
  - CSSE 120—Introduction to Software Development (Fall 2011)

Invited Math Colloquium Talks, Keynote Talks, & Plenary Talks

- "On the local-global conjecture for 3-dimensional Kleinian sphere packings," Plenary Talk, Southern Regional Number Theory Conference (SRNTC) (Mar. 29, 2025)
- "Apollonian circle packings, integers, and higher-dimensional sphere packings"
  - Colloquium, Department of Mathematics, Spelman College (Feb. 24, 2025)

  - Colloquium, Department of Mathematics, Kennesaw State University (Feb. 21, 2025)
  - Colloquium, Department of Mathematics, Wake Forest University (Nov. 9, 2023)
  - Colloquium, Pomona Research in Mathematics Experience (PRiME) (June 30, 2023)
  - Math/Stat Colloquium, Swarthmore College (Mar. 22, 2022)
  - Math/Stats Colloquium, Carleton College *(virtual)* (Sept. 22, 2020)
- "Apollonian circle packings and integers," Keynote for North Carolina State University's Association for Women in Mathematics (AWM) Sonia Kovalevsky (SK) Day (Apr. 13, 2024)
- "The Descartes circle theorem: How kissing circles give rise to a quadratic equation," Math/Stats Colloquium, Carleton College (Jan. 24, 2022)
- "An Asymptotic Local-Global Principle for Integral Kleinian Sphere Packings," Plenary Talk, Mid-Atlantic Seminar On Numbers V *(virtual)* (Mar. 28, 2021)

Other Invited Math Talks

- "Number theory, sphere packings, and bridges," AMS Special Session on The Impact of the ASCEND Program: Research and Reflection, Joint Mathematics Meetings (Jan. 7, 2026)
- "On the local-global conjecture for 3-dimensional Kleinian sphere packings"
  - Postdoc Speaker, Palmetto Number Theory Series (PANTS) XL (Dec. 6, 2025)
  - Algebra and Number Theory Seminar, Pennsylvania State University (Oct. 21, 2025)
  - Purdue Analytic Number Theory and Harmonic Analysis (PANTHA) Seminar, Purdue University (Apr. 4, 2025)
- "Versions of the circle method"
  - Discrete Mathematics Seminar, Kennesaw State University (Feb. 20, 2025)
  - Algebra and Combinatorics Seminar, Tulane University (Feb. 12, 2025)
- "On the local-global conjecture for higher-dimensional Kleinian sphere packings"
  - Number Theory Seminar, University of Washington (Jan. 14, 2025)
  - AMS Special Session on Local-to-Global in Apollonian Circle Packings and Beyond, Joint Mathematics Meetings (Jan. 11, 2025)
- "Pre-Talk for Bayou Arithmetic Research Day (BARD) 4," covering partitions, generating functions, and the circle method (Oct. 11, 2024)
- "Lecture on the circle method," Bootcamp for the 35th Automorphic Forms Workshop (May 22, 2023)
- "The Kloosterman circle method and weighted representation numbers of positive definite quadratic forms"
  - Ramanujan-Serre (Number Theory) Seminar, University of Virginia (Mar. 17, 2023)
  - Algebra, Combinatorics, Topology, Geometry, and Number Theory Seminar (ANT-CoG), University of North Carolina Greensboro (Feb. 27, 2023)
  - Number Theory Seminar, Kansas State University (Feb. 1, 2023)
  - AMS Special Session on Quadratic Forms, Modular Forms, and Applications, Joint Mathematics Meetings (Jan. 6, 2023)
  - Number Theory Seminar, Duke University (Sept. 28, 2022)
- "A strong asymptotic local-global principle for integral Kleinian sphere packings," Algebra and Number Theory Seminar, Louisiana State University (Nov. 16, 2021)
- "Local-global I: Apollonian packings," Arbeitsgemeinschaft: Thin Groups and Superapproximation, Mathematisches Forschungsinstitut Oberwolfach *(virtual)* (Oct. 12, 2021)

- "A local-global principle for integral Kleinian sphere packings"
  - Number Theory Seminar, Duke University *(virtual)* (Oct. 6, 2021)
  - Number Theory Seminar, Rutgers University *(virtual)* (Oct. 5, 2021)
  - PANTHA Seminar, Purdue University *(virtual)* (Sept. 29, 2021)
- "An Asymptotic Local-Global Principle for Integral Kleinian Sphere Packings"
  - Number Theory Seminar, University of Washington *(virtual)* (Mar. 30, 2021)
  - Number Theory Seminar, University of Illinois Urbana-Champaign *(virtual)* (Mar. 16, 2021)
  - Number Theory Seminar, University of Cambridge *(virtual)* (Mar. 9, 2021)
- "The Local-Global Principle for Integral Crystallographic Sphere Packings," AMS Special Session on Quadratic Forms and Theta Functions, Joint Mathematics Meetings *(virtual)* (Jan. 6, 2021)
- "Local Densities of Diagonal Integral Ternary Quadratic Forms at Odd Primes," Study Group in Number Theory Seminar, The Graduate Center, CUNY (Feb. 28, 2020)

Contributed Math Conference Talks

- "On the local-global conjecture for 3-dimensional Kleinian sphere packings," Diophantine Equations, Combinatorics, Analysis in Number Theory: Emerging Researchers (DECANTER) (June 20, 2025)
- "Representations by Ternary Quadratic Forms"
  - Analytic and Combinatorial Number Theory: The Legacy of Ramanujan (A conference in honor of Bruce C. Berndt's 80th birthday) (June 8, 2019)
  - Rose-Hulman Undergraduate Math Conference (Apr. 24, 2015)
  - Indiana MAA Section Spring Meeting, Taylor University (Mar. 14, 2015)
  - Pi Mu Epsilon Session #5, MAA MathFest, Portland, OR (Aug. 8, 2014)
- "Theoretical Friends of Finite Proximity"
  - Indiana MAA Section Spring Meeting, Franklin College (Mar. 18, 2016)
  - Southern Africa Mathematical Sciences Association (SAMSA) Annual Conference, Windhoek, Namibia (Nov. 25, 2015)
  - Young Mathematicians Conference (Aug. 23, 2015)

Poster Presentations

- "r-Completeness of Sequences of Positive Integers," presented with William Linz, Undergraduate Poster Session, Joint Mathematics Meetings, Seattle, WA (Jan. 8, 2016)
- "Representations by Ternary Quadratic Forms," Undergraduate Poster Session, Joint Mathematics Meetings, San Antonio, TX (Jan. 12, 2015)

Service to Department & Mathematics Community

- Co-organizer of Math for All in New Orleans (Apr. 5, 2025 & Apr. 10, 2026)
- Co-organizer of Project NExT session "Mental Health Case Studies from an Instructor's Perspective" for the Green '23 cohort (Aug. 7, 2024)
- Co-organizer of mentoring lunches among women of color in mathematics in North Carolina (Oct. 2023–May 2024)
- Panelist on Graduate Research Opportunities Workshop (GROW) 2023 "From day 1 to PhD — current and recent student perspectives" panel (Oct. 22, 2023)

- Co-organizer of the AMS Special Session on Special Session on Number Theory and Friends at the AMS 2023 Fall Southeastern Sectional Meeting (Oct. 13–15, 2023)
- Invited speaker for Math with Melanin at Wake Forest University (Apr. 17, 2023)
- Panelist on Rutgers Graduation Panel (a panel about research & paperwork at Rutgers and job applications) (May 3, 2022)
- Panelist on the Lunch in the Time of Covid panel "How to talk about racism and discrimination in your department" (Sept. 20, 2021)
- Co-organizer of the People Online In Number Theory (POINT) Tea-Time (Apr.–Sept. 2021)
- Panelist on the Pomona Research in Mathematics Experience (PRiME) Grad School Panel (July 23, 2021)
- Panelist on the Georgia Tech Math REU Grad School Panel (June 10, 2021)
- Co-organizer of the AMS Special Session on Quadratic Forms and Theta Functions at the Joint Mathematics Meetings (Jan. 6, 2021)
- Invited Our Stories speaker for the Online Undergraduate Resource Fair for the Advancement in Academia of Marginalized Mathematicians (OURFA^{2}M^2) (Dec. 19, 2020)
- Co-organizer of the Rutgers AMS Graduate Student Chapter Job Materials Workshop (Sept. 26–27, 2020)
- Organizer of the Rutgers AMS Graduate Student Chapter Research Bonanzas (May 8, 2019 & May 6, 2020)
- Panelist on a panel about graduate student life for woMAN UP!, a workshop on math advice and networking at the University of Pennsylvania (Sept. 28, 2019)
- Organizer of the Number Theory Learning Seminar at Rutgers (Jan.–May 2019)
- Organizer of the Rutgers Graduate Student Number Theory Seminar (Sept.–Dec. 2018)
- Organizer of the Rutgers AMS Graduate Student Chapter 3D printing workshop (Dec. 14, 2017)

Outreach & Teaching Students in K–12

- **Leader** for Tulane K–12 STEM Enrichment (Sept. 2024–present)
  - Lead some math activities in New Orleans public schools for grades 2–7
- **Workshop Leader** of "Changing Colors with Pattern Blocks" for Boys at Tulane in STEM (BATS) (Apr. 11, 2026)
- **Workshop Leader** of "Changing Colors with Pattern Blocks" for Girls in STEM at Tulane (GiST) (Mar. 7, 2026)
- **Leader** of a Mobile Math Circle titled "Magic Flowers" (Nov. 10, 2025)
- **Workshop Leader** of "Tile with Style" for GiST (Oct. 11, 2025)
- **Workshop Leader** of "Tile with Style" for BATS (Sept. 20, 2025)
- **Workshop Leader** of "Doodles & Doors" for GiST (Mar. 22, 2025)
- **Workshop Leader** of "Doodles & Doors" for BATS (Feb. 1, 2025)
- **Workshop Leader** of "Magic Flowers" for GiST (Oct. 26, 2024)
- **Workshop Leader** of "Mathemagical Flowers" for BATS (Sept. 21, 2024)

- **Leader** of a Triangle Math Teachers' Circle titled "Number Games on Graphs" (May 18, 2024)
- **Facilitator** for the Duke Math Circles (Oct. 2022–May 2024)
  - **Co-organizer** for the Duke Math Circles (May 2023–May 2024)
- **Panelist** for the National Museum of Mathematics event "A Roundtable Discussion on Math Education in the U.S." (July 29, 2021)
- **Facilitator Trainer & Facilitator** for the Girls Math JAM Festival (June 2021)
  - Trained festival facilitators with Julia Robinson Mathematics Festival (JRMF) activities
  - Facilitated the JRMF activity Staircases at the festival with rising 5th–9th grade girls
- **Assistant Instructor** for the San Francisco Math Circle (SFMC) (Sept.–Dec. 2020)
  - Facilitated SFMC activities in 4 weekly classes on Zoom for 6th–8th grade students
- **Mathematician & Facilitator** at Julia Robinson Mathematics Festival (JRMF) (Apr.–Aug. 2020)
  - Assisted in the JRMF activity creation process by discussing the math & pedagogy behind activities and by editing the activity slides
  - Facilitated JRMF activities in weekly webinars on Zoom
  - Created some materials to help facilitators facilitate JRMF activities
- **Leader** of a Rutgers Math Teachers' Circle titled "Nimbers (Numbers and the Game of Nim)" (Feb. 11, 2020)
- **Facilitator** for the JRMF festival at the Joint Mathematics Meetings (Jan. 18, 2020)
- **Volunteer Teacher's Helper** with Math 6 and Math 6A at Highland Park Middle School, Highland Park, New Jersey (Feb.–June 2019)
  - Facilitated small-group mathematical discussions among 6th grade students
  - Helped teach math skills to a recently immigrated student with limited English skills
- **Co-organizer** of the "Mathematical Games and Puzzles from Around the World!" booth at Rutgers Day (Apr. 27, 2019)
- **Department of Mathematics Volunteer** at the "Women and Math" booth at Rutgers Day (Apr. 28, 2018)
- **Co-leader** of the workshop "Elements of Number Theory" for a program at Rutgers for the Johns Hopkins Center for Talented Youth (July 15, 2017)
- **Counselor** for the Ross Mathematics Program (June–July 2016)
  - Directly supervised four high school students
  - Graded & gave feedback on students' mathematics problem sets

Professional Affiliations & Leadership

- American Mathematical Society (AMS) (2016–present)
  - Secretary of Rutgers Graduate Student Chapter (2017–2022)
- Association for Women in Mathematics (AWM) (2018–present)
- Mathematical Association of America (MAA) (2014–2016 & 2023–present)
- National Association of Mathematicians (NAM) (2024–present)
- Pi Mu Epsilon (PME) (2014–2015)
  - President of the Indiana Gamma Chapter (2014–2015)

Some Additional Work Experience

- **Textbook Proofreader** for the structural engineering textbook *Structural Analysis: Skills for Practice* written by Dr. James Hanson (Aug. 2015–June 2016)
- **Software Engineering Intern** at Raytheon, Indianapolis, Indiana (May–Aug. 2013)
- **Civil Engineering Intern** at French-Reneker-Associates, Fairfield, Iowa (June–July 2011)