

## Sarah Trebat-Leder

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CONTACT INFORMATION      Emory Math and Science Center      [mathcs.emory.edu/~streat](http://mathcs.emory.edu/~streat)  
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### EDUCATION      **Emory University, Atlanta, GA**

Mathematics PhD candidate in number theory with advisor Ken Ono

- NSF Graduate Fellowship
- Woodruff Fellowship
- Dissertation Title: Modular Forms and Moonshine
- Expected Graduation: May 2018

### **Princeton University, Princeton, NJ**

A.B. in mathematics with high honors and Phi Beta Kappa, June 2013

### TEACHING EXPERIENCE

- Instructor at Emory Math Circle (Jan 2014 - present): Primarily work with middle schoolers and have develop my own curriculum.
- Instructor at Art of Problem Solving (Aug 2017 - present): Teaching two sections of Algebra B.
- Junior Faculty at BEAM 7 (Summer 2016 and 2017): Taught courses to rising 8th graders in Logic and Proof, Information Theory, Solving Big Problems, and Mathematical Writing.
- Instructor at Emory Math Circle's Week of Mathematical Exploration (Summers 2016 and 2017): Mentored middle and high school students in mini-research projects which resulted in presentations.
- Instructor at Emory's Mathematics REU (Summer 2014 and 2015): Helped to mentor undergraduate research projects in modular forms which resulted in publications and presentations.
- Instructor at Emory University (Aug 2014 - May 2015): Taught a section of Calculus 1 and a section of Calculus 2 to undergraduates at Emory.
- Counselor at Mathpath (Summer 2010), SWiM (Summer 2010), and PROMYS (Summer 2013). At Mathpath, taught a course on group theory.
- Instructor at School Plus (Sept 2010 - May 2013): Taught weekly enrichment classes to small groups of middle and high schoolers, developing my own curriculum.

### LEADERSHIP EXPERIENCE

- Director of Emory Math Circle (Jan 2014 - present): Developed a math enrichment program that now serves over 200 students each semester. Recruit and coordinate instructors, maintain our website and mailing lists, communicate with parents, and run the registration process.
- Director Emory Math Circle's Week of Mathematical Exploration (Summers

2016 and 2017): Designed and ran a 1-week summer program for middle and high school students, including managing the application process, finding appropriate problems, recruiting other instructors, and coordinating with the REU on joint events.

- Director of Emory's Julia Robinson Math Festival (Jan 2016, Sept 2016, Sept 2017): Ran three math festival with about 100 5th - 12th graders attending. This involves recruiting, training, and supervising volunteers, managing registration, and finding appropriate activities.
- Advisor of Intown Atlanta Math Teachers' Circle (Spring 2017 - present): Recruited faculty members from Emory, Georgia Tech, and Georgia State to start a math teachers' circle. Provide advice and support to the leadership team.
- Organizing Committee Member at Emory Unite (Fall 2016 - present): Working to improve working conditions for graduate student employees by pushing for unionization and running issues-based campaigns.
- Officer for Graduate Math and CS Society (Fall 2015 - present): While I've taken on various officer roles, my main focus in this student group has been on advocating for mathematics graduate students to the department and graduate student administrators.
- Logistics Coordinator of Princeton University Mathematics Competition (Fall 2010 - Fall 2013): Ran, and later advised, the day-of logistics for this international math competition for high school students, including recruiting and overseeing about 100 volunteers and leading the headquarters staff in responding to problems during the competition.
- President Princeton Math Club (2010 - 2012) Worked to improve the experience of math majors, including planning colloquia and social events, running programs that encouraged undergrads to interact outside of the classroom with graduate students and faculty, holding information sessions on REUs, senior theses, and graduate school, and being a liaison between the department and undergraduate students.

RELEVANT  
TRAINING

- Oct 2015 - present: Have been regularly taking classes in improvisational theatre and personal storytelling.
- Sept 2016: Participated in Circle on the Road, and gave a talk on Emory Math Circle's Week of Mathematical Exploration.
- Spring 2016: Completing a 6 day certificate program in nonprofit organization management through the Georgia Center for Nonprofits.
- Jan 2016: Attended mini-courses on "Getting Started in the Scholarship of Teaching and Learning" and "Increasing Student Engagement and Understanding through Active Learning Strategies in Calculus" at the JMM.
- Sept 2015 - Present: Participated in the Math Circle Mentorship and Partnership Program, including a 3-day workshop and monthly webinars.
- Spring 2013: Took a course in Princeton's teacher preparation program entitled "Seminar on Student Learning and Methods for Teaching", which in-

cluded 18 hours of site-based field experience split between an urban middle school and a suburban high school.

#### PUBLICATIONS

- *A new moonshine for the Mathieu group  $M_{24}$* , in preparation
- *The 1729 K3 Surface*; with Ken Ono; Res. Number Theory 2 (2016), Art. 26, 6 pp.
- *On  $p$ -adic modular forms and the Bloch-Okounkov Theorem*; with Michael Griffin and Marie Jameson; Res. Math. Sci. 3 (2016), Paper No. 11, 14 pp.
- *Elliptic curves with everywhere good reduction over quadratic number fields*; with Amanda Clemm; J. Number Theory 161 (2016), 135–145.
- *Classical and umbral moonshine: connections and  $p$ -adic properties*; with Ken Ono and Larry Rolen; J. Ramanujan math. Soc. 30 (2015), no. 2, 135 – 159.
- *Elliptic curves with full 2-torsion and maximal adelic Galois representation*; with David Corwin, Tony Feng, Zane K. Li; Math. Comp. 83 (2014), no. 290, 2925 – 2951.
- *$\ell$ -adic properties of partition functions*; with Eva Belmont, Holden Lee, and Alexandra Musat; Monatsh. Math. 173 (2014), no. 1, 1 – 34.

#### INVITED TALKS AND OUTREACH ACTIVITIES

- Sept 21, 2017: *Liar’s Bingo*, Chattanooga Math Circle
- Feb 16, 2017: *Mathematical Making*, MakEdu ATL Maker Educators Meetup
- Feb 1 and 8 2017: “*Yes, and...*” *Improving Math Play with Improv*, Natural Math Online Workshop
- Oct 31, 2016: *On  $p$ -adic modular forms and the Bloch-Okounkov Theorem*, Columbia Mathematical Physics Seminar
- Mar 20, 2016: *A new moonshine for the Mathieu group  $M_{23}$* , Gainesville International Number Theory Conference
- Mar 5, 2016: *The 1729 K3 Surface*, AMS Southeast Sectional Meeting, Special Session on Elliptic Curves
- Feb 26, 2016: *The 1729 K3 Surface*, USC Algebraic Geometry, Arithmetic Geometry, and Commutative Algebra Seminar
- Dec 21 2015: *The 1729 K3 Surface*, Number Theory and Algebraic Geometry at SASTRA in Kumbakonam, India
- June 14, 21, and 28 2014: *Zometools and Bubbles*, Children’s Museum of Atlanta
- Apr 12, 2014: *The Number Theory of Moonshine*, AMS Central Sectional Meeting, Special Session on Recent Developments in Number Theory
- April 1, 2014: *The Number Theory of Moonshine*, Emory University Algebra and Number Theory Seminar
- Oct 16, 2013: *Elliptic curves and abelian surfaces with maximal adelic image*, Clemson Algebraic Geometry and Number Theory Seminar