

Robert Schneider, Dean's Teaching Fellow at Emory University

Curriculum Vitae

Contact

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Education

- Emory University, Atlanta, Georgia (2016–May 2018 expected) – Ph.D. candidate in Mathematics
- Emory University, Atlanta, Georgia (2012–2016) – M.S. in Mathematics
- University of Kentucky, Lexington, Kentucky (2007–2012) – B.S. in Mathematics

Research interests

- Number theory and combinatorics; in particular, the theory of integer partitions, special functions in the orbit of modular forms (q -series, mock theta functions, quantum modular forms), and analytic number theory (zeta functions and other L-functions, prime distribution).
- Active secondary interests include statistical physics, computational chemistry (member of Emory Working Group on Number Theory and Molecular Simulation), history of mathematics, and the intersection of mathematics and the arts.

Teaching statement

- My goal is to convey to students the beauty of mathematics, as well as its immense utility.

Teaching

- Emory University, Dean's Teaching Fellow at Arrendale Women's Prison: History of Mathematics–Ancient Arithmetic and the Birth of Mathematics (Spring 2018 scheduled)
- Emory University, Dean's Teaching Fellow at Arrendale Women's Prison: Writing Lab (Fall 2017)
- Emory University, Instructor: Math 111–Calculus 1 (Fall 2013–Spring 2016)
- Emory University, Teaching Assistant: Calculus Help Session (Fall 2012–Spring 2013)

Other educational experience

- Decatur High School, Decatur, Georgia, Math Team coach (Fall 2016–present)
- Glendover Elementary School, Lexington, Kentucky, Weekly math tutor (2006–2012)

Non-academic professional experience

- Musician, songwriter, record producer, composer for film/stage/television/installation, band-leader of The Apples in stereo, co-founder of The Elephant 6 Recording Co. collective of musicians and artists, recording/mixing/mastering engineer, recording studio manager, record label manager and publicist, sound sculpture artist (1993 – present)

Fellowships and residencies

- Woodruff Fellowship, Emory University (2012–2017)
- Residency at Banff International Research Station jointly with Banff Centre for Arts and Creativity, Banff, Alberta, Canada, “*MSI: Music, Film and Mathematics Together*” (inter-disciplinary collaboration with number theorist Andrew Granville, screenwriter Jennifer Granville, filmmaker Thomas Britt, and musicians from Banff Centre) (Aug. 10–17, 2013)
- Dean’s Teaching Fellowship, Emory University (2017–2018)

Referee experience

- Journals: *American Mathematical Monthly*, *Ramanujan Journal*, *Research in Number Theory*
- Book publishers: CRC Press, Princeton University Press

Publications

1. A non-Pythagorean musical scale based on logarithms, *Proceedings of Bridges: Mathematics, Music, Art, Architecture, Culture Conference* (June, 2012)
2. Uncovering Ramanujan's "lost" notebook: An oral history, *Ramanujan Journal* (Dec., 2012)
3. A "strange" vector-valued quantum modular form (co-author Larry Rolen), *Archiv der Mathematik* (July, 2013)
4. A golden product identity for e , *Mathematics Magazine* (April, 2014)
5. A golden connection (short expository article), *Mathematics Magazine* (April, 2014)
6. Combinatorial applications of Moebius inversion (co-author Marie Jameson), *Proc. of the Am. Math. Soc.* (Sept., 2014)
7. Encounter with the infinite (co-author Benjamin Phelan), *The Believer* (January-February, 2015), reprinted in *Namarupa: Categories of Indian Thought* (Spring, 2015)
8. Why Ramanujan Matters (co-author Ken Ono), *Sloan Science & Film* (May, 2016), reprinted in *Ramanujan Mathematical Society Newsletter* (March-June, 2016), reprinted in *Asia Pacific Mathematics News* (November, 2016)
9. Partition zeta functions, *Research in Number Theory* (Dec., 2016)
10. Fibonacci numbers and the golden ratio, *Parabola* (Dec., 2016)
11. Arithmetic of partitions and the q -bracket operator, *Proc. of the Am. Math. Soc.* (May, 2017)
12. Explorations in the theory of partition zeta functions (co-authors Ken Ono and Larry Rolen), *Exploring the Riemann Zeta Function, 190 years from Riemann's Birth*, editors: H. Montgomery, A. Nikeghbali, M. Rassias, Springer Books (To appear)
13. Partition-theoretic formulas for arithmetic densities (co-authors Ken Ono and Ian Wagner), *Proceedings of Number Theory in Honor of Krishna Alladi's 60th Birthday*, Springer (To appear)
14. Extracting aggregation free energies of mixed clusters from simulations of small systems: application to ionic surfactant micelles (co-authors Xiaokun Zhang, Lara Patel, Olivia Beckwith, Christopher Weeden, James Kindt), *Journal of Chemical Theory and Computation* (To appear)
15. Jacobi's triple product, mock theta functions, unimodal sequences and the q -bracket, *International Journal of Number Theory* (To appear)
16. Alternating "strange" functions (Submitted June, 2017)

Invited talks and contributed papers

- Algebra Seminar, University of Tennessee, Knoxville, Tennessee, invited lecture, "*Partition zeta functions*" (May 2, 2017)
- AMS/MAA Joint Mathematics Meetings (JMM), Atlanta, Georgia, invited panel, "*MAA Panel: Outside the Equation – Exploring Alternative Forms of Mathematics Communication*" (Jan. 7, 2017)
- AMS/MAA Joint Mathematics Meetings (JMM), Atlanta, Georgia, invited talk, "*MAA Special Presentation: Relatively Prime – Live Podcast*" (Jan. 6, 2017)
- AMS/MAA Joint Mathematics Meetings (JMM), Atlanta, Georgia, AMS Contributed Papers Session on Number Theory, "*Jacobi's triple product, mock theta functions and the q -bracket*" (Jan. 4, 2017)
- Emory University, invited lectures to undergraduate Probability and Statistics class, "*Partitions, statistical physics and the universe*" (Nov. 29 - 30, 2016)
- International Conference on Number Theory in Honor of Krishna Alladi for His 60th Birthday, University of Florida, Gainesville, Florida, invited lecture, "*Arithmetic of partitions*" (Mar. 20, 2016)
- AMS Spring Southeast Sectional Meeting, Special Session on Experimental Mathematics, University of Georgia, Athens, Georgia, invited lecture, "*Arithmetic of partitions*" (Mar. 5, 2016)
- International Conference on Number Theory, SASTRA University, Kumbakonam, India, "*Partition zeta functions*" (Dec. 21, 2015)
- Combinatorics Seminar, Pennsylvania State University, State College, Pennsylvania, invited lecture, "*Partition zeta functions*" (Oct. 23, 2015)
- Maker Faire Atlanta 2015, Decatur, Georgia, electronics build demonstrations sponsored by Acorn Amplifiers, "*How to make a mind-controlled synthesizer*" (Oct. 3–4, 2015)
- Palmetto Number Theory Series XXIV, Emory University, Atlanta, Georgia, "*Partition-theoretic zeta functions*" (Sept. 12, 2015)
- TEDx Emory 2014 Conference, Emory University, Atlanta, Georgia, invited lecture, "*Patterns etched in sound*" (Apr. 12, 2014)
- The Legacy of Ramanujan, SASTRA University, Kumbakonam, India, invited lecture, "*A new 'strange' quantum modular form*" (joint work with Larry Rolin – Dec. 14, 2012)
- International Conference on the Works of Srinivasa Ramanujan and Related Topics, University of Mysore, Mysore, India, "*A new 'strange' quantum modular form*" (joint work with Larry Rolin – Dec. 12, 2012)
- Berry College, Floyd, Georgia, invited lecture, "*Proofs without lyrics: Mathematical ideas in musical form*" (Nov. 26, 2012)
- Kentucky Section MAA Annual Meeting, Bellarmine University, Louisville, Kentucky, Contributed Paper Session, "*Al-Jabar: A mathematical game of strategy*" (joint work with Cyrus Hettle – Mar. 31, 2012)
- Banff International Research Station for Mathematical Innovation and Discovery, Banff, Alberta, Canada, Mathematics: Muse, Maker, and Measure of the Arts Workshop, "*Proofs without lyrics: Mathematical ideas in musical form*" (Dec. 6, 2011)
- Spelman College, Atlanta, Georgia, invited lecture, "*Proofs without lyrics: Mathematical ideas in musical form*" (Sept. 22, 2011)
- University of Georgia, invited lecture to undergraduate Mathematics and Music class, "*Proofs without lyrics: Mathematical ideas in musical form*" (Sept. 21, 2011)
- Centre College, Danville, Kentucky, Bluegrass Undergraduate Mathematics Symposium, "*A golden pair of identities in the theory of numbers*" (Sept. 17, 2011)

- MAA MathFest, Lexington, Kentucky, Pure Mathematics Contributed Paper Session, “*A golden pair of identities in the theory of numbers*” (Aug. 6, 2011)
- Duke University, Durham, North Carolina, invited lecture to undergraduate neuroscience class, “*The Teletron mind-control interface for analog synthesizers,*” with ensemble performance of experimental score “Eclipses of the Sun and Moon” composed by J. Mangum (Apr. 20, 2011)
- MAA MathFest, Portland, Oregon, Undergraduate Student Paper Session, “*On a fruitful identity in the theory of numbers*” (Aug. 7, 2009)
- Clemson University, Clemson, South Carolina, invited lecture to REU class, “*On a fruitful identity in the theory of numbers*” (June 6, 2009)
- AMS/MAA Joint Math. Meetings, Washington, D.C., invited host of *Ray and Charles Eames Film Festival* at MAA Carriage House, with lecture on mathematical films of the designers (Jan. 4, 2009)
- MAA MathFest, San Jose, California, “*Public interview with Robert Schneider by MAA President Joe Gallian*” (Aug. 3, 2007)

Selected other public works

- 2Z Or Not 2Z (regular math-themed comic strip series), *Parabola* (To appear)
- *Advice from the Oceans* art installation, Athens Institute of Contemporary Art (ATHICA), Athens, Georgia, “*Ocean Telephone No. 3*”, “*Ocean Telephone No. 6*” and “*Synthesizer for the Wind*” (collaborations with Max Schneider), electronic sound sculptures (Sept. 13 – Nov. 16, 2014)
- Canadian Mathematical Society Meeting, Montreal, Quebec, Canada, musical score “*Reverie in Prime Time Signatures*” for play *MSI (Mathematical Sciences Investigation): The Anatomy of Integers and Permutations* by Andrew Granville and Jennifer Granville (two performances), electronic recording (Dec. 7 – 8, 2012)
- Gathering for Gardner – Celebration of Mind 2011, rules for board game *Al-Jabar: A Mathematical Game of Strategy* based on abstract algebra (co-author Cyrus Hettle), published online to commemorate Martin Gardner’s birthday (Oct. 21, 2011)
- AUX Experimental Arts Festival, Ciné Theater, Athens, Georgia, musical score “*Composition for Two Hemispheres*” for Teletron mind-controlled synthesizer, ensemble performance with 3-D projections (May 7, 2011)
- Mathematical Sciences Research Institute (MSRI), Berkeley, California, musical score “*Reverie in Prime Time Signatures*” for play *MSI (Mathematical Sciences Investigation): The Anatomy of Integers and Permutations* by Andrew Granville and Jennifer Granville, electronic recording (Apr. 29, 2011)
- *The QR Code Show* art installation, Pink Hobo Gallery, Minneapolis, Minnesota, musical score “*Non-Pythagorean Composition No. 6*” based on logarithms, electronic recording (June 16 – Jul. 29, 2010)
- Institute for Advanced Study, Princeton, New Jersey, musical score “*Reverie in Prime Time Signatures*” for play *MSI (Mathematical Sciences Investigation): The Anatomy of Integers and Permutations* by Andrew Granville and Jennifer Granville, ensemble performance (Dec. 12, 2009)

Memberships in professional organizations

- American Mathematical Society (AMS)
- American Society of Composers, Authors and Publishers (ASCAP)
- Euler Society
- Mathematical Association of America (MAA)