GENE S. KOPP

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EMPLOYMENT

University of Bristol and **Heilbronn Institute of Mathematical Research**, Bristol, UK, Autumn 2017–present
Heilbronn Research Fellow

University of Michigan, Ann Arbor, MI, Autumn 2011–Spring 2017
Graduate Student Instructor (7 semesters)
NSF RTG Fellow (2 semesters)
Graduate Student Research Assistant (3 semesters)

EDUCATION

University of Michigan, Ann Arbor, MI
Ph.D., Mathematics, 2017
Advisor: Jeffrey C. Lagarias
Ph.D. thesis: **Indefinite Theta Functions and Zeta Functions**

University of Chicago, Chicago, IL
B.S., Mathematics, with honors, 2011

Budapest Semesters in Mathematics, Budapest, Hungary
Mathematics coursework, Sept.–Dec. 2009

PRIZES

SIAM Student Paper Prize ($1000 cash, plus travel to SIAM annual conference), awarded annually to up to three "student author(s) of the most outstanding paper(s) accepted by SIAM journals within three years of the nomination deadline", 2018.

Third Prize, Outstanding Presentation Competition, Young Mathematicians Conference, The Ohio State University, August 29, 2010.

GRANTS

Heilbronn Grant for Focused Research Workshop on "Synthesizing approaches to the Stark conjectures" (£7500, joint with Owen Patashnick), planned for Winter 2022.

Heilbronn Grant for Focused Research Workshop on "Zauner's Conjecture" (£2000), Spring 2019.

Heilbronn Referral Initiative for successful recruitment of a female job candidate (£1000), 2018–2019.

Heilbronn Focused Research Grant for number-theoretic methods in dispersive PDE (£2000), 2017–2018.

RESEARCH ARTICLES (PREPRINTS)

8. **A Kronecker limit formula for indefinite zeta functions**
   arXiv:2010.16371. Posted Oct 2020.
   36 pages

RESEARCH ARTICLES (PUBLICATIONS)

7. **Indefinite zeta functions**
   Research in the Mathematical Sciences, 8(17):1–34, 2021.
   34 pages

6. **SIC-POVMs and the Stark conjectures**
   International Mathematics Research Notices, rnz153, 2019.
   27 pages

5. **Generating weights for the Weil representation of cyclic quadratic modules of even order**
   Joint w/ Luca Candelori and Cameron Franc
   Journal of Number Theory, 180:474–497, 2017.
   24 pages

4. **The arithmetic geometry of resonant Rossby wave triads**
   SIAM J. Appl. Algebra Geometry, 1(1):352–373, 2017.
   22 pages

3. **The limiting spectral measure for ensembles of symmetric block circulant matrices**
   Joint w/ Murat Koloğlu and Steven J. Miller; appendices w/ Frederick W. Strauch and Wentao Xiong.
   Journal of Theoretical Probability, 26(4):1020–1060, 2013.
   41 pages

2. **Robust coin flipping**
   Joint w/ John D. Wiltshire-Gordon
   In *Advances in Cryptology—EUROCRYPT 2012*, 172–194. Springer Berlin Heidelberg, 2012.
   23 pages

1. **On the number of summands in Zeckendorf decompositions**
   Joint w/ Murat Koloğlu, Steven J. Miller, and Yinghui Wang
   Fibonacci Quarterly 49(2):116–131, 2011.
   16 pages

SURVEY ARTICLES AND OTHER MATHEMATICAL PUBLICATIONS

Rubel's Problem: from Hayman's List to the Chabauty Method (with Edward Crane). Feature article in *LMS Newletter*, 492:24–29, Jan 2021.

PAPERS IN PREPARATION

Signed square roots of Stark units as limits of q-Pochhammer ratios.

The ray class field of an order (with Jeffrey C. Lagarias).

SIC-POVMs and orders in real quadratic number fields (with Jeffrey C. Lagarias).

Ghost SICs and Wigner functions (with Marcus Appleby and Steven Flammia).

Construction of SIC-POVMs (with Marcus Appleby and Steven Flammia).

Superirreducible polynomials (with Jonathan Bober, Lara Du, Dan Fretwell, and Trevor Wooley).

Gauss composition with level structure (with Olivia Beckwith).

Polyharmonic Maass forms and Hecke L-series (with Olivia Beckwith).

DISSERTATION

Indefinite Theta Functions and Zeta Functions. Ph.D. thesis (University of Michigan), 2017. Advisor: Jeffrey C. Lagarias.

UNPUBLISHED INFORMAL PAPERS

Spherical matrix ensembles (with Steven J. Miller), arXiv:1501.01848. Posted Jan 2015.

Word-induced measures on compact groups (with John D. Wiltshire-Gordon). arXiv:1102.4353. Posted Feb 2011.

TEACHING

Topics in Modern Geometry, University of Bristol, co-instructor, Autumn 2018.

Calculus II, University of Michigan, principal instructor, Autumn 2015.

Calculus II, University of Michigan, principal instructor, Winter 2014.

Foundations of Computer Science, University of Michigan, teaching assistant, Autumn 2013.

Calculus I, University of Michigan, principal instructor, Winter 2013.

Differential Equations, University of Michigan, teaching assistant, Autumn 2012.

Calculus I, University of Michigan, principal instructor, Winter 2012.

Data, Functions & Graphs, University of Michigan, principal instructor, Autumn 2011.

MENTORSHIP OF STUDENT RESEARCH

Summer student project on "Arithmetic of optimal projective packings" planned at the University of Bristol, Summer 2021.

Co-mentored (with Cameron Franc) undergraduates Aleyah Dawkins and Aaditya Sharma in a project on "Modular forms and hypergeometric differential equations," University of Michigan REU, Summer 2015.

RESEARCH TALKS (SORTED CHRONOLOGICALLY WITHIN TOPICS)

Talks on "Gauss Composition with Level Structure"

AMS Special Session on Quadratic Forms and Theta Functions, **Joint Mathematics Meetings** (online), Winter 2021.

Talks on "Indefinite Theta Functions and Zeta Functions"

Number Theory Seminar, **Kansas State University** (online), Autumn 2020.

Number Theory Seminar, **Vanderbilt University** (online), Autumn 2020.

Linfoot Number Theory Seminar, **University of Bristol**, Autumn 2017.

Talks on "Complex Equiangular Lines and the Stark Conjectures"

Virtual Mathematics Seminar, **Royal Holloway University of London** (online), Autumn 2020.

Codes and Expansions (CodEx) Seminar (online), Summer 2020.

Number Theory Seminar, **Rutgers University**, Autumn 2019.

SIAM Conference on Applied Algebraic Geometry, Bern, Switzerland, Summer 2019.

Algebra and Number Theory Seminar, **University of Kentucky**, Winter 2019.

Number Theory Seminar, **The Ohio State University**, Winter 2019.

Quebec-Vermont Number Theory Seminar, **McGill University**, Autumn 2018.

Quantum Physics Seminar, **University of Massachusetts Boston**, Autumn 2018.

Young Researchers in Algebraic Number Theory, Sheffield, UK, Autumn 2018.

Bristol-Oxbridge-Warwick-London (BOWL) 1-day meeting, Oxford, UK, Autumn 2018.

Talks on "Polyharmonic Maass forms and Hecke L-functions"

Young Researchers in Algebraic Number Theory, Warwick, UK, Autumn 2019.

Talks on "The Arithmetic Geometry of Resonant Rossby Wave Triads"

SIAM Annual Meeting (prize lecture), Portland, Oregon, Summer 2018.

Pure Institute Meeting, **University of Bristol**, Autumn 2017.

University of Saskatchewan, Autumn 2017.

PDE Seminar, **Georgia Institute of Technology**, Autumn 2016.

Central AMS Sectional Meeting, Minneapolis, Minnesota, Autumn 2016.

Chicago Number Theory Day, **University of Illinois Chicago**, Spring 2015.

Talks on "Generating Weights of Modules of Vector-Valued Modular Forms for the Weil Representation"

Building Bridges: 4th EU/US Workshop on Automorphic Forms and Related Topics, Budapest, Hungary, Summer 2018.

AMS Special Session on Representation Theory, Automorphic Forms and Related Topics, **Central AMS Sectional Meeting**, Minneapolis, Minnesota, Autumn 2016.

Talks on "Robust Coin Flipping"

EECS Theory Seminar, **University of Michigan**, Winter 2012.

CRYPTO rump session (with John D. Wiltshire-Gordon), University of California, Santa Barbara, Summer 2011.

Talks on "Eigenvalue Statistics for Toeplitz and Circulant Ensembles"

Institute of Mathematical Statistics Asia Pacific Rim Meeting (with Murat Koloğlu, Steven J. Miller, and Karen Shen), Tsukuba, Japan, Summer 2012.

Young Mathematicians Conference, Ohio State University, Autumn 2010.

OUTREACH

Facilitator for the Julia Robinson Mathematics Festival webinar series, Spring 2020–present.

Activity leader for the Julia Robinson Mathematics Festival, Joint Mathematics Meeting, Denver, Colorado, Winter 2020.

Leader/facilitator for Michigan Math Circles for high school and middle school students, Autumn 2012–Winter 2015.

Course assistant for Knot Theory course for high school students at the Young Scholars Program, University of Chicago, Summer 2009.

Co-instructor of Number Theory Seminar for high school students at the Ross Mathematics Program, The Ohio State University, Summer 2008.

Counselor at the Ross Mathematics Program, The Ohio State University, Summers 2007 and 2008.

LEADERSHIP AND SERVICE

Co-organiser of the Heilbronn number theory seminar, University of Bristol, Autumn 2017–Spring 2019 and Autumn 2020–present.

Co-organiser of the AMS Special Session on Quadratic Forms and Theta Function, Joint Mathematics Meeting, online, Winter 2021.

Judge for the MAA Undergraduate Student Poster Session, Joint Mathematics Meeting, online, Winter 2021.

Judge for the MAA Undergraduate Student Poster Session, Joint Mathematics Meeting, Denver, Colorado, Winter 2020.

Referee for:

Communications in Nonlinear Science and Numerical Simulation (1 paper)

Journal of Mathematical Physics (2 papers)

Journal of Number Theory (1 paper)

COMPUTER SKILLS

Magma, Mathematica, PARI/GP, Macaulay2, GAP, C, Python, Scheme, LaTeX, HTML, WordPress, UNIX shell, Microsoft Teams, Zoom.