

## Armin Straub

straub@southalabama.edu

Department of Mathematics and Statistics

University of South Alabama

Mobile, AL 36688 (USA)

<http://arminstraub.com>

containing preprints, slides of talks, and a current CV

## Academic employment

<i>since 2015</i>	University of South Alabama Assistant Professor (tenure-track)
<i>2012 – 2015</i> <i>(on leave during 2013)</i>	University of Illinois at Urbana-Champaign J. L. Doob Research Assistant Professor
<i>2013</i>	Max-Planck-Institut für Mathematik, Bonn (DE) Postdoctoral fellow

## Academic education

<i>2008 – 2012</i>	Ph.D. in Mathematics from Tulane University thesis: “Arithmetic aspects of random walks and methods in definite integration” advisor: Victor H. Moll co-advisor: Jonathan M. Borwein, University of Newcastle (AU)	
<i>2007 – 2008</i>	Diplom in Mathematics from TU Darmstadt (DE) thesis: “Local recognition of reflection graphs on Coxeter groups” supervisor: Ralf Köhl (né Gramlich)	(with distinction)
<i>2006 – 2007</i>	M.S. in Mathematics from Tulane University	
<i>2003 – 2006</i>	Student of Mathematics at TU Darmstadt (DE) minor in Computer Science	

## Research Interests

My research lies at the interface of number theory, combinatorics and special functions.  
Common threads are connections with modular forms and symbolic computation.

## Extended research visits

<i>2017, Nov</i>	Erwin Schroedinger Institute (AT) invited participant and speaker at the program <i>Algorithmic and Enumerative Combinatorics</i>	(2 weeks)
<i>2015, Mar–Apr</i>	Max-Planck-Institut für Mathematik, Bonn (DE) visiting researcher	(8 weeks)
<i>2014, Aug</i>	Singapore University of Technology and Design (SG) invited by James G. Wan	(2 weeks)
<i>2013, Oct</i>	Research Institute for Symbolic Computation (AT) invited by Veronika Pillwein and Peter Paule	(1 week)
<i>2009, 2010, 2011</i>	University of Newcastle (AU) invited by Jonathan M. Borwein	(4+12+4 weeks)
<i>2009, Jun</i>	Grinnell College invited by Marc Chamberland	(4 weeks)

## Preprints

- [4] (with Robert Osburn) *Interpolated sequences and critical  $L$ -values of modular forms* submitted, 2018, [arXiv:1806.05207](#)
- [3] (with Sam Formichella) *Gaussian binomial coefficients with negative arguments* submitted, 2018, [arXiv:1802.02684](#)
- [2] (with Frits Beukers, Marc Houben) *Gauss congruences for rational functions in several variables* submitted, 2017, [arXiv:1710.00423](#)
- [1] (with Dermot McCarthy, Robert Osburn) *Sequences, modular forms and cellular integrals* submitted, 2017, [arXiv:1705.05586](#)

## Refereed publications

- [42] *Supercongruences for polynomial analogs of the Apéry numbers* accepted for publication in **Proceedings of the American Mathematical Society**, 2018, [arXiv:1803.07146](#)
- [41] (with Yuliy Baryshnikov, Stephen Melczer, Robin Pemantle) *Diagonal asymptotics for symmetric rational functions via ACSV* **Leibniz International Proceedings in Informatics** (Analysis of Algorithms 2018), Vol. 110, 2018, p. 12:1–12:15, [DOI](#)
- [40] (with Wadim Zudilin) *Short walk adventures (in memory of Jon Borwein)* accepted for publication in **Proceedings of the Jon Borwein Commemorative Conference**, 2018, [arXiv:1801.06002](#)
- [39] (with Robert Osburn, Wadim Zudilin) *A modular supercongruence for  ${}_6F_5$ : An Apéry-like story* accepted for publication in **Annales de l'Institut Fourier**, 2018, [arXiv:1701.04098](#)
- [38] (with Shaun Cooper, Jesús Guillera, Wadim Zudilin) *Crouching AGM, hidden modularity* Chapter 9 of the book: **Frontiers in Orthogonal Polynomials and  $q$ -Series**; Editors: Z. Nashed and X. Li; World Scientific, 2018, p. 169-187, [DOI](#)
- [37] (with Bruce C. Berndt) *Ramanujan's formula for  $\zeta(2n + 1)$*  Chapter 2 of the book: **Exploring the Riemann Zeta Function**; Editors: H. Montgomery, A. Nikeghbali, and M. Rassias; Springer, 2017, p. 13-34, [DOI](#)
- [36] *Core partitions into distinct parts and an analog of Euler's theorem* **European Journal of Combinatorics**, Vol. 57, 2016, p. 40-49, [DOI](#)
- [35] (with Bruce C. Berndt) *On a secant Dirichlet series and Eichler integrals of Eisenstein series* **Mathematische Zeitschrift**, Vol. 284, Nr. 3, 2016, p. 827-852, [DOI](#)
- [34] (with Amita Malik) *Divisibility properties of sporadic Apéry-like numbers* **Research in Number Theory**, Vol. 2, Nr. 1, 2016, p. 1-26, [DOI](#)
- [33] (with Jonathan M. Borwein, Christophe Vignat) *Densities of short uniform random walks in higher dimensions* **Journal of Mathematical Analysis and Applications**, Vol. 437, Nr. 1, 2016, p. 668-707, [DOI](#)
- [32] (with Bruce C. Berndt) *Certain integrals arising from Ramanujan's notebooks* **SIGMA** (special issue on Orthogonal Polynomials, Special Functions and Applications), Vol. 11, Nr. 083, 2015, 11 p., [DOI](#)
- [31] (with Harold G. Diamond) *Bounds for the logarithm of the Euler gamma function and its derivatives* **Journal of Mathematical Analysis and Applications**, Vol. 433, Nr. 2, 2016, p. 1072-1083, [DOI](#)

- [30] *Special values of trigonometric Dirichlet series and Eichler integrals*  
**The Ramanujan Journal** (special issue dedicated to Marvin Knopp), Vol. 41, Nr. 1, 2016, p. 269-285, DOI
- [29] *Congruences for Fishburn numbers modulo prime powers*  
**International Journal of Number Theory**, Vol. 11, Nr. 5, 2015, p. 1679-1690, DOI
- [28] *Multivariate Apéry numbers and supercongruences of rational functions*  
**Algebra & Number Theory**, Vol. 8, Nr. 8, 2014, p. 1985-2008, DOI
- [27] (with Robert Osburn, Brundaban Sahu) *Supercongruences for sporadic sequences*  
**Proceedings of the Edinburgh Mathematical Society**, Vol. 59, Nr. 2, 2016, p. 503-518, DOI
- [26] (with Wadim Zudilin) *Positivity of rational functions and their diagonals*  
**Journal of Approximation Theory** (special issue dedicated to Richard Askey), Vol. 195, 2015, p. 57-69, DOI
- [25] (with Luis A. Medina) *On multiple and infinite log-concavity*  
**Annals of Combinatorics**, Vol. 20, Nr. 1, 2016, p. 125-138, DOI
- [24] (with David Borwein, Jonathan M. Borwein) *On lattice sums and Wigner limits*  
**Journal of Mathematical Analysis and Applications**, Vol. 414, Nr. 2, 2014, p. 489-513, DOI
- [23] (with Marc Chamberland) *On gamma quotients and infinite products*  
**Advances in Applied Mathematics**, Vol. 51, Nr. 5, 2013, p. 546-562, DOI
- [22] (with Jonathan M. Borwein) *Relations for Nielsen polylogarithms*  
**Journal of Approximation Theory** (special issue dedicated to Richard Askey), Vol. 193, 2015, p. 74-88, DOI
- [21] (with Mark W. Coffey, Valerio De Angelis, Atul Dixit, Victor H. Moll, Christophe Vignat)  
*The Zagier polynomials. Part II: Arithmetic properties of coefficients*  
**The Ramanujan Journal**, Vol. 35, Nr. 3, 2014, p. 361-390, DOI
- [20] (with Mathew Rogers) *A solution of Sun's \$520 challenge concerning  $\frac{520}{\pi}$*   
**International Journal of Number Theory**, Vol. 9, Nr. 5, 2013, p. 1273-1288, DOI
- [19] (with Tewodros Amdeberhan, David Borwein, Jonathan M. Borwein)  
*On formulas for  $\pi$  experimentally conjectured by Jauregui-Tsallis*  
**Journal of Mathematical Physics**, Vol. 53, Nr. 7, 2012, p. 073708:1-15, DOI
- [18] (with Jonathan M. Borwein) *Mahler measures, short walks and log-sine integrals*  
**Theoretical Computer Science** (special issue on Symbolic and Numeric Computation), Vol. 479, Nr. 1, 2013, p. 4-21, DOI
- [17] (with David Borwein, Jonathan M. Borwein, James Wan) *Log-sine evaluations of Mahler measures, II*  
**Integers** (Selfridge memorial volume), Vol. 12, Nr. 6, 2012, p. 1179-1212, DOI
- [16] (with David Borwein, Jonathan M. Borwein) *A sinc that sank*  
**American Mathematical Monthly**, Vol. 119, Nr. 7, Aug-Sep 2012, p. 535-549, DOI
- [15] (with Jonathan M. Borwein) *Special values of generalized log-sine integrals*  
**Proceedings of ISSAC 2011** (36th International Symposium on Symbolic and Algebraic Computation), ACM Press, Jun 2011, p. 43-50, DOI
- [14] (with Jonathan M. Borwein, James Wan, Wadim Zudilin)  
*Densities of short uniform random walks (with an appendix by Don Zagier)*  
**Canadian Journal of Mathematics**, Vol. 64, Nr. 5, 2012, p. 961-990, DOI

- [13] (with Tewodros Amdeberhan, Ivan Gonzalez, Marshall Harrison, Victor H. Moll)  
*Ramanujan's Master Theorem*  
**The Ramanujan Journal**, Vol. 29, Nr. 1, 2012, p. 103-120, DOI
- [12] (with Jonathan M. Borwein) *Log-sine evaluations of Mahler measures*  
**Journal of the Australian Mathematical Society** (special issue dedicated to Alf van der Poorten),  
Vol. 92, Nr. 1, 2012, p. 15-36, DOI
- [11] *A  $q$ -analog of Ljunggren's binomial congruence*  
**DMTCS Proceedings: 23rd International Conference on Formal Power Series and Algebraic Combinatorics (FPSAC)**, Jun 2011, p. 897-902, DOI
- [10] (with Ivan Gonzalez, Victor H. Moll) *The method of brackets. Part 2: Examples and applications*  
"Gems in Experimental Mathematics", **Contemporary Mathematics**, Vol. 517, 2010, p. 157-171, DOI
- [9] (with Jonathan M. Borwein, James Wan) *Three-step and four-step random walk integrals*  
**Experimental Mathematics**, Vol. 22, Nr. 1, 2013, p. 1-14, DOI
- [8] (with Jonathan M. Borwein, Dirk Nuyens, James Wan)  
*Some arithmetic properties of short random walk integrals*  
**The Ramanujan Journal**, Vol. 26, Nr. 1, 2011, p. 109-132, DOI
- [7] (with Jonathan M. Borwein, Dirk Nuyens, James Wan) *Random walks in the plane*  
**DMTCS Proceedings: 22nd International Conference on Formal Power Series and Algebraic Combinatorics (FPSAC)**, Jul 2010, p. 191-202, DOI
- [6] (with Tewodros Amdeberhan, Olivier Espinosa, Victor H. Moll) *Wallis-Ramanujan-Schur-Feynman*  
**American Mathematical Monthly**, Vol. 117, Nr. 15, Aug 2010, p. 618-632, DOI
- [5] (with Tewodros Amdeberhan, Victor H. Moll)  
*Closed-form evaluation of integrals appearing in positronium decay*  
**Journal of Mathematical Physics**, Vol. 50, Nr. 10, Oct 2009, p. 103528:1-6, DOI
- [4] (with Dante Manna, Luis Medina, Victor H. Moll)  
*A fast numerical algorithm for the integration of rational functions*  
**Numerische Mathematik**, Vol. 115, Nr. 2, Apr 2010, p. 289-307, DOI
- [3] (with Tewodros Amdeberhan, Victor H. Moll) *The  $p$ -adic valuation of  $k$ -central binomial coefficients*  
**Acta Arithmetica**, Vol. 140, Nr. 1, 2009, p. 31-42, DOI
- [2] (with Ralf Gramlich, Jonathan I. Hall)  
*The local recognition of reflection graphs of spherical Coxeter groups*  
**Journal of Algebraic Combinatorics**, Vol. 32, Nr. 1, Aug 2010, p. 1-14, DOI
- [1] *Positivity of Szegő's rational function*  
**Advances in Applied Mathematics**, Vol. 41, Nr. 2, Aug 2008, p. 255-264, DOI

## Research talks

- 2018, Jun 21 Gauss congruences  
Combinatory Analysis 2018 (in honor of George Andrews' 80th birthday), Penn State University
- 2018, May 8 Gauss congruences  
International Conference on Mathematics and Statistics (ICOMAS 2018), Special Session on Analytic Number Theory, University of Memphis
- 2017, Nov 14 Properties of Laurent coefficients of multivariate rational functions  
Workshop on Computer Algebra in Combinatorics, Erwin Schroedinger Institute (AT)

- 2017, Sept 17 A modular supercongruence for  ${}_6F_5$ : An Apéry-like story  
Palmetto Number Theory Series (PANTS XXVIII), University of Tennessee
- 2017, Jul 31 Congruences connecting modular forms and truncated hypergeometric series  
AG17—SIAM Conference on Applied Algebraic Geometry, Minisymposium on Symbolic Combinatorics, Georgia Tech
- 2017, Mar 16 A gumbo with hints of partitions, modular forms, special integer sequences and supercongruences  
Number Theory Seminar, University of Illinois at Urbana-Champaign
- 2017, Jan 6 Core partitions into distinct parts and an analog of Euler's theorem  
AMS Joint Mathematics Meetings 2017, Special Session on Partition Theory and Related Topics, Atlanta
- 2016, Oct 6 Core partitions into distinct parts and an analog of Euler's theorem  
Integers Conference, University of West Georgia
- 2016, Sept 15 An analog of Euler's theorem on integer partitions  
Colloquium, University of South Alabama
- 2016, Mar 19 Core partitions into distinct parts and an analog of Euler's theorem  
International Conference on Number Theory in honor of Krishna Alladi's 60th birthday, University of Florida
- 2016, Mar 6 Divisibility properties of sporadic Apéry-like numbers  
AMS Spring Southeastern Sectional Meeting, Special Session on Experimental Mathematics, University of Georgia
- 2016, Jan 7 Divisibility properties of sporadic Apéry-like numbers  
AMS Joint Mathematics Meetings 2016, Session on Number Theory, Seattle
- 2015, Jun 3 Special values of trigonometric Dirichlet series  
13th International Symposium on Orthogonal Polynomials, Special Functions and Applications, Minisymposium on the Legacy of Ramanujan, NIST
- 2015, Jun 2 Divisibility properties of sporadic Apéry-like numbers  
13th International Symposium on Orthogonal Polynomials, Special Functions and Applications, Minisymposium on Symbolic Computation and Special Functions, NIST
- 2015, May 12 On a  $q$ -analog of the Apéry numbers  
International conference on orthogonal polynomials and  $q$ -series (celebrating Mourad E.H. Ismail), University of Central Florida
- 2015, Mar 11 Supercongruences for Apéry-like numbers  
Seminar Aachen-Köln-Lille-Siegen on Automorphic Forms, University of Cologne (DE)
- 2015, Feb 26 Properties and applications of Apéry-like numbers  
Colloquium, University of South Alabama
- 2015, Jan 11 Congruences for Fishburn numbers modulo prime powers  
AMS Joint Mathematics Meetings 2015, Special Session on Partitions,  $q$ -Series, and Modular Forms, San Antonio

---

 2013–2014
 

---

- 2014, Oct 20 Trigonometric Dirichlet series and Eichler integrals  
Number Theory and Experimental Mathematics Day, Dalhousie University
- 2014, Oct 18 On a  $q$ -analog of the Apéry numbers  
AMS Fall Eastern Sectional Meeting 2014, Special Session on Experimental Mathematics in Number Theory, Analysis, and Combinatorics, Dalhousie University
- 2014, Oct 18 Positivity of rational functions and their diagonals  
AMS Fall Eastern Sectional Meeting 2014, Special Session on Special Functions and Their Applications, Dalhousie University
- 2014, Sept 18 Properties and applications of Apéry-like numbers  
Colloquium, Tulane University

- 2014, Aug 14 Supercongruences for Apéry-like numbers  
Number Theory Seminar, National University of Singapore (SG)
- 2014, Aug 13 Supercongruences for Apéry-like numbers  
Number Theory Seminar, National Institute of Education (SG)
- 2014, Aug 8 Properties and applications of Apéry-like numbers  
Plenary lecture, International Conference on Algebra and Number Theory, Samsun (TR)
- 2014, Jul 22 Apéry numbers and their experimental siblings  
Challenges in 21st Century Experimental Mathematical Computation, ICERM
- 2014, Jul 9 Supercongruences for Apéry-like numbers  
Building Bridges: 2<sup>nd</sup> EU-US Workshop on Automorphic Forms and Related Topics,  
University of Bristol (GB)
- 2014, Jun 3 Multivariate Apéry numbers  
Midwest Number Theory Conference for Graduate Students and Recent PhDs XI, University  
of Illinois at Urbana-Champaign
- 2014, May 12 On a secant Dirichlet series and Eichler integrals of Eisenstein series  
28th Automorphic Forms Workshop, Moab
- 2014, Apr 13 Multivariate Apéry numbers and supercongruences of rational functions  
AMS Spring Central Sectional Meeting 2014, Special Session on Recent Developments in  
Number Theory, Texas Tech University
- 2014, Apr 3 Properties and applications of Apéry-like numbers  
Number Theory Seminar, University of Illinois at Urbana-Champaign
- 2013, Nov 18 On the ubiquity of modular forms and Apéry-like numbers  
Algebra and Number Theory Seminar, University College Dublin (IE)
- 2013, Nov 12 On a secant Dirichlet series and Eichler integrals of Eisenstein series  
Number Theory Seminar, University of Cologne (DE)
- 2013, Oct 17 On the ubiquity of modular forms and Apéry-like numbers  
Algebra and Combinatorics Seminar, Tulane University
- 2013, Oct 12 On a secant Dirichlet series and Eichler integrals of Eisenstein series  
AMS Fall Eastern Sectional Meeting 2013, Special Session on Modular Forms and Modular  
Integrals in Memory of Marvin Knopp, Temple University
- 2013, Oct 9 On the ubiquity of modular forms and Apéry-like numbers  
Algorithmic Combinatorics Seminar, RISC, Johannes Kepler University (AT)
- 2013, Jul 10 A solution of Sun's \$520 challenge concerning  $520/\pi$   
SIAM Annual Meeting, Minisymposium on Symbolic Computation and Special Functions,  
San Diego
- 2013, Mar 14 A solution of Sun's \$520 challenge concerning  $520/\pi$   
27th Automorphic Forms Workshop, University College Dublin (IE)
- 2013, Feb 13 Arithmetic aspects of short random walks  
Number Theory Lunch Seminar, Max-Planck-Institut für Mathematik, Bonn (DE)
- 2013, Jan 29 Arithmetic aspects of short random walks  
Number Theory Seminar, University of Cologne (DE)

---

 2012 and earlier
 

---

- 2012, Nov 15 On the  $q$ -binomial coefficients and binomial congruences  
 $q$ -Series Seminar, University of Illinois at Urbana-Champaign
- 2012, Oct 28 An application of modular forms to short random walks  
AMS Fall Western Sectional Meeting 2012, Special Session on Harmonic Maass Forms and  
 $q$ -Series, University of Arizona
- 2012, Oct 13 A  $q$ -analog of Ljunggren's binomial congruence  
Midwest Number Theory Conference for Graduate Students and Recent PhDs IX, University  
of Illinois at Urbana-Champaign

- 2012, Sept 27 Arithmetic aspects of short random walks  
Number Theory Seminar, University of Illinois at Urbana-Champaign
- 2012, Aug 10 An application of modular forms to short random walks  
Building Bridges: 1<sup>st</sup> EU-US Conference on Automorphic Forms and Related Topics, RWTH Aachen (DE)
- 2012, Jan 7 Symbolic evaluation of log-sine integrals in polylogarithmic terms  
AMS Joint Mathematics Meetings 2012, Boston
- 2011, Oct 6 Hypergeometric evaluations of the densities of short random walks  
AG11—SIAM Conference on Applied Algebraic Geometry, Minisymposium on Symbolic Combinatorics, North Carolina State University
- 2011, Aug 24  $q$ -binomial coefficient congruences  
CARMA Analysis and Number Theory Seminar, University of Newcastle (AU)
- 2011, Jun 9 Special values of generalized log-sine integrals  
ISSAC 2011—International Symposium on Symbolic and Algebraic Computation, San Jose
- 2011, May 19 Applications and evaluations of log-sine integrals  
JonFest 2011—Workshop on Computational and Analytical Mathematics in honour of Jonathan Borwein's 60th birthday, The IRMACS Centre, Simon Fraser University (CA)
- 2011, Jan 9 On the method of brackets  
AMS Joint Mathematics Meetings 2011, Special Session on Mathematics Related to Feynman Diagrams, New Orleans
- 2010, Oct 14 On infinite logconcavity  
Colloquium, University of Newcastle (AU)
- 2010, Aug 2 Random walks in the plane  
FPSAC 2010—Formal Power Series & Algebraic Combinatorics, SFSU
- 2009, Aug 18 Random walk integrals  
CARMA Workshop on Multidimensional Numerical Integration and Special Function Evaluation, University of Newcastle (AU)

## Educational talks

- 2018, Apr 11 Special numbers and how to recognize them numerically  
Association for Computing Machinery (ACM) Student Seminar, University of South Alabama
- 2014, Feb 20 An introduction to infinite log-concavity  
Graduate Student Number Theory Seminar, University of Illinois at Urbana-Champaign
- 2013, Oct 15 Tools for special functions and special numbers  
Graduate Student Colloquium of the Mathematics Department, Tulane University
- 2012, Apr 26 On the distance traveled in a few random steps  
GSSA Interdisciplinary Colloquium Series, Tulane University
- 2012, Mar 7 Pre  $\pi$  fest: A short portrayal of random facts  
Pi Day Pre-Game by Science and Engineering Honor Society (SEHS), Tulane University
- 2011, Oct 27 Random walks and where to find a drunkard  
Science and Engineering Honor Society (SEHS) Student Seminar, Tulane University
- 2011, Apr 12 How far does a drunkard get?  
Graduate Student Colloquium of the Mathematics Department, Tulane University

## Poster presentations

- 2011, Jun 13 A  $q$ -analog of Ljunggren's binomial congruence  
FPSAC 2011—Formal Power Series & Algebraic Combinatorics, Reykjavik (IS)
- 2010, Aug 8 Random walk integrals  
School of Science and Engineering Research Day Poster Session, Tulane University

## Teaching experience

<i>2018, Spring</i>	Instructor for Linear Algebra II & Cryptography	
<i>2017, Fall</i>	Instructor for Calculus and its Applications	(3 sections)
<i>2017, Spring</i>	Instructor for Linear Algebra II & Cryptography	
<i>2016, Fall</i>	Instructor for Linear Algebra & Intro to Number Theory	(2+1 sections)
<i>2016, Summer</i>	Invited lecturer for the <a href="#">2016 AARMS Summer School</a> at Dalhousie University designed and taught a special topics graduate course (Introduction to Special Functions and WZ Theory)	
<i>2016, Spring</i>	Instructor for Calculus III	(2 sections)
<i>2015, Fall</i>	Instructor for Calculus II & Linear Algebra	

---

University of Illinois at Urbana-Champaign

---

<i>2014, Fall</i>	Instructor for Applied Linear Algebra 400-level introduction to linear algebra; total of 396 students from various sciences	(2 large sections)
<i>2014, Spring</i>	Instructor for Introduction to Differential Equations Plus	(2 sections)
<i>2012, Fall</i>	Instructor for Introduction to Differential Equations Plus 200-level introduction to differential equations, including systems of linear equations; mostly engineering students	

---

Tulane University

---

<i>2012, Spring</i>	Instructor for Real Analysis 300-level proof-based introduction to analysis for math majors	
<i>2011, Fall</i>	Instructor for Calculus I	
<i>2011, Spring</i>	Instructor for Statistics for Business	
<i>2010, Spring</i>	Instructor for Statistics for Scientists	
<i>2009, Fall</i>	Instructor for Calculus II	

---

Early work as teaching assistant

---

<i>2007, Summer</i>	Supervised undergraduate students on the research project “Experimental Mathematics” lead by Victor H. Moll, Tulane University	
<i>2006 – 2008</i>	Course Assistant at Tulane University for	<ul style="list-style-type: none"> <li>• Calculus I,</li> <li>• Calculus II,</li> <li>• Linear Algebra,</li> <li>• Experimental Mathematics.</li> </ul>
<i>2004 – 2008</i>	Course Assistant at TU Darmstadt for	<ul style="list-style-type: none"> <li>• Numerical Analysis,</li> <li>• Linear Algebra,</li> <li>• Statistics,</li> <li>• Stochastic Analysis,</li> <li>• Algebra.</li> </ul>



**Teaching awards**

- 2015 “Distinguished Teaching Award in Mathematics for Non-Tenure-Track Faculty”  
University of Illinois at Urbana-Champaign
- 2012, 2014 Appeared on the [List of Teachers Ranked as Excellent by their Students](#) for  
each class taught at the University of Illinois at Urbana-Champaign
- 2012 “Excellent Graduate Student Teacher Award”  
Mathematics Department, Tulane University

**Academic grants, honors and awards (non-teaching)**

- 2017 – 2022 [Simons Collaboration Grant](#) (\$30,000 + \$12,000)  
Simons Foundation
- 2017 Arts & Sciences Support and Development Award (\$1,500)  
College of Arts & Sciences, University of South Alabama
- 2015 – 2018 [AMS-Simons Travel Grant](#) (\$4,000 + \$800)  
American Mathematical Society & Simons Foundation
- 2016 Arts & Sciences Summer Professional Development Award (\$1,000)  
College of Arts & Sciences, University of South Alabama
- 2015 SIAM Early Career Travel Award to attend OPSFA13 (\$650)  
International Symposium on Orthogonal Polynomials, Special Functions and Applications
- 2014 Co-recipient of the [G. de B. Robinson Award](#) for the paper *Densities of short  
uniform random walks (with an appendix by Don Zagier)*  
Canadian Mathematical Society
- 2011, Jun [ISSAC 2011 Distinguished Student Author Award](#) for the paper *Special values  
of generalized log-sine integrals* (\$300)  
International Symposium on Symbolic and Algebraic Computation, San Jose
- 2011, May “Excellence in Mathematics Graduate Student Award” (\$250)  
Mathematics Department, Tulane University
- 2010, Apr Poster *Random Walk Integrals* selected 1st place in Graduate Division (\$250)  
School of Science and Engineering Research Day Poster Session, Tulane University
- 2009 – 2010 IBM Fellow in Computational Science (\$4,000)  
Center for Computational Science, Tulane University
- 2007, Apr “Outstanding First Year Graduate Student Award”  
Mathematics Department, Tulane University

## Student mentoring

Graduate students writing a Master's thesis under my direction:

- since 2018* Joel Henningsen — *Sequences modulo primes and finite state automata*  
in process
- 2017 – 2018* Emily L. Grinstead — *Multiple log-concavity of finite sequences*  
awarded a Ph.D. position at UTK, including teaching assistantship and graduate fellowship

Undergraduate students mentored:

- since 2016* Sam Formichella  
awarded SURF (2017); paper submitted to UCUR; second joint paper submitted to a math journal; awarded SURF (2018, turned down); selected for 2018 REU Program at Auburn
- 2017, Spring* Kevin McKeown (applied to SURF unsuccessfully)
- 2014, Fall* IGL project:  $p$ -adic properties of sequences and finite state automata  
mentored Amita Malik (graduate student team leader) and Arian Daneshvar, Pujan Dave, Zhefan Wang (undergraduate students) on a semester-long research project

Master's Thesis Committee Member for the following students:

- 2017 – 2018* Colby B. Parker (advisor: Jeffrey T. McDonald, Computer Science)
- 2017 – 2018* Thanh Nguyen (advisor: Jeffrey T. McDonald, Computer Science)
- 2016 – 2017* Rafi Qumsieh (advisor: Maria Byrne, Mathematics)

## Academic services and memberships

- since 2017* Editor for [The Ramanujan Journal](#) (Springer)
- since 2012* Reviewer for *Mathematical Reviews* (15 reviews)
- since 2014* Reviewer for the NSA Mathematical Sciences Grant Program (2 reviews)
- since 2007* Referee for the following journals and proceedings:
- The Ramanujan Journal (32 times)
  - International Journal of Number Theory (11 times)
  - Journal of Mathematical Analysis and Applications (9 times)
  - The American Mathematical Monthly (5 times), Journal of Symbolic Computation (3 times), Proceedings of the AMS (3 times), Journal of Number Theory (3 times), Research in Number Theory (3 times), Ars Combinatoria (2 times), Discrete Mathematics (2 times), Rocky Mountain Journal of Mathematics (2 times), Integers (2 times), Advances in Mathematics, Bulletin of the LMS, Proceedings of the Edinburgh Mathematical Society, Journal of Difference Equations and Applications, Communications in Number Theory and Physics, Acta Arithmetica, Experimental Mathematics, Research in the Mathematical Sciences, Israel Journal of Mathematics, European Journal of Combinatorics, Computer Physics Communications, Applied Mathematics Letters, Artificial Intelligence and Symbolic Computation, Contemporary Mathematics
- 2018* Co-organizer of the *USA/USM/SELU Research Mini-Conference* held April 26 at the University of South Alabama
- 2017* Organized the special session *Arithmetic Properties of Sequences from Number Theory and Combinatorics* with Eric Rowland at the AMS JMM 2017
- 2017* Reviewer for Banff International Research Station (BIRS) workshop proposal
- since 2007* Member of the American Mathematical Society (AMS)
- since 2013* Member of the Society for Industrial and Applied Mathematics (SIAM)

## Departmental and university service

<i>2017 – 2018</i>	Scholarship Committee (chair) Arts & Sciences Support and Development Awards Committee
<i>2016, 2018</i>	Judge for the Mobile Regional Science & Engineering Fair
<i>2016 – 2017</i>	Hiring Committee for two tenure-track positions Scholarship Committee Arts & Sciences Summer Professional Development Committee
<i>2015 – 2016</i>	Library Committee (chair)

— before University of South Alabama —

<i>2014 – 2015</i>	Organizer of the Number Theory Seminar at UIUC
<i>2009 – 2010</i>	Coorganizer of the Graduate Student Colloquium at Tulane University
<i>2008 – 2010</i>	GSSA (Graduate Studies Student Association) representative of the Mathematics Department, Tulane University

## Other qualifications

<i>Languages</i>	German (native), English (fluent)
<i>Computer algebra</i>	Experience in several computer algebra systems including Mathematica and SAGE
<i>Programming</i>	Experience in various programming environments including Python, PHP, SQL, HTML