Armin Straub

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University of South Alabama
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http://arminstraub.com
containing preprints, slides of talks, and a current CV

Academic employment

since 2021	University of South Alabama Associate Professor	
2015 – 2021	University of South Alabama Assistant Professor	
2012 – 2015 *(on leave during 2013)*	University of Illinois at Urbana-Champaign J. L. Doob Research Assistant Professor	
2013	Max-Planck-Institut für Mathematik, Bonn (DE) Postdoctoral fellow	

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.

Academic education

2008 – 2012	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)	
2007 – 2008	Diplom in Mathematics from TU Darmstadt (DE) thesis: "Local recognition of reflection graphs on Coxeter groups" supervisor: Ralf Köhl (né Gramlich)	(with distinction)
2006 – 2007	M.S. in Mathematics from Tulane University	
2003 – 2006	Student of Mathematics at TU Darmstadt (DE) minor in Computer Science	

Extended research visits for collaboration

2022, Jun–Jul	Inria Saclay (FR) hosted by Alin Bostan	(1 week)
2022, Jun	University of Vienna (AT) hosted by Michael Schlosser	(1 week)
2022, Apr	Research Institute for Symbolic Computation (AT) invited by Veronika Pillwein	(3 weeks)
2022, Jan	Mathematisches Forschungsinstitut Oberwolfach (DE) Research in Pairs program with Jehanne Dousse, Jeremy Lovejoy, Robert Osburn	(2 weeks)

2019, Jul	Research Institute for Symbolic Computation (AT)	(3 weeks)
	invited by Veronika Pillwein	
2017, Nov	Erwin Schroedinger Institute (AT)	(2 weeks)
	invited participant and speaker at the program *Algorithmic and Enumerative Combinatorics*	
2015, Mar–Apr	Max-Planck-Institut für Mathematik, Bonn (DE)	(8 weeks)
	visiting researcher	
2014, Aug	Singapore University of Technology and Design (SG)	(2 weeks)
	invited by James G. Wan	
2013, Oct	Research Institute for Symbolic Computation (AT)	(1 week)
	invited by Veronika Pillwein and Peter Paule	
2009, 2010, 2011	University of Newcastle (AU)	(4+12+4 weeks)
	invited by Jonathan M. Borwein	
2009, Jun	Grinnell College	(4 weeks)
	invited by Marc Chamberland	

Preprints

[5] (with David J. Hemmer, Karlee J. Westrem)
Equal knapsack identities between symmetric group character degrees
preprint, October 2025, arXiv:2510.00301

[4] (with N. Guru Sharan) *Partitions with Durfee triangles of fixed size*
submitted, July 2025, arXiv:2507.19047

[3] (with David J. Hemmer, Karlee J. Westrem)
New identities in the character table of symmetric groups involving Riordan numbers
submitted, July 2025, arXiv:2509.02796

[2] (with Marc Chamberland) *Weakening the Legendre Conjecture*
submitted, March 2025

[1] *Partial Lucas-type congruences*
submitted, October 2024

Refereed publications

[58] (with John Pomerat) *Criteria for the integrality of nth roots of power series*
Acta Arithmetica, Vol. 215, Nr. 1, 2024, p. 1-10, DOI

[57] *Gessel–Lucas congruences for sporadic sequences*
Monatshefte für Mathematik, Vol. 203, 2024, p. 883-898, DOI

[56] *Trigonometric Dirichlet series and Eichler integrals*
to appear in **Srinivasa Ramanujan: His Life, Legacy, and Mathematical Influence**; Editors: K. Alladi,
G. E. Andrews, B. C. Berndt, F. Garvan, K. Ono, P. Paule, S. O. Warnaar, and A. J. Yee; Springer, 2024

[55] (with Alin Bostan, Sergey Yurkevich) *On the representability of sequences as constant terms*
Journal of Number Theory, Vol. 253, 2023, p. 235-256, DOI

[54] (with Wadim Zudilin) *Sums of powers of binomials, their Apéry limits, and Franel's suspicions*
International Mathematics Research Notices, Vol. 2023, Nr. 11, 2023, p. 9861-9879, DOI

[53] (with Joel A. Henningsen) *Generalized Lucas congruences and linear p-schemes*
Advances in Applied Mathematics, Vol. 141, 2022, #102409, p. 1-20, DOI

[52] *On congruence schemes for constant terms and their applications*
Research in Number Theory, Vol. 8, Nr. 3, 2022, #42, p. 1-21, DOI

[51] (with Marc Chamberland) *Apéry limits: Experiments and proofs*
American Mathematical Monthly (special issue in memory of Jonathan Borwein), Vol. 128, Nr. 9, 2021, p. 811-824, DOI

[50] (with Tewodros Amdeberhan, Victor H. Moll, Christophe Vignat)
A triple integral analog of a multiple zeta value
International Journal of Number Theory, Vol. 17, Nr. 2, 2021, p. 223-237, DOI

[49] (with Hannah E. Burson, Simone Sisneros-Thiry) *Refined counting of core partitions into d-distinct parts*
Electronic Journal of Combinatorics, Vol. 28, Nr. 1, 2021, #P1.37, p. 1-21, DOI

[48] (with Dermot McCarthy, Robert Osburn) *Sequences, modular forms and cellular integrals*
Mathematical Proceedings of the Cambridge Philosophical Society, Vol. 168, Nr. 2, 2020, p. 379-404, DOI

[47] (with Karl Dilcher, Christophe Vignat)
Identities for Bernoulli polynomials related to multiple Tornheim zeta functions
Journal of Mathematical Analysis and Applications, Vol. 476, Nr. 2, 2019, p. 569-584, DOI

[46] (with Sam Formichella) *Gaussian binomial coefficients with negative arguments*
Annals of Combinatorics (special issue dedicated to George E. Andrews), Vol. 23, Nr. 3, 2019, p. 725-748, DOI

[45] (with Drew Lewis, Kaitlyn Perry)
An algorithmic approach to the Polydegree Conjecture for plane polynomial automorphisms
Journal of Pure and Applied Algebra, Vol. 223, Nr. 12, 2019, p. 5346-5359, DOI

[44] (with Robert Osburn) *Interpolated sequences and critical L-values of modular forms*
Chapter 14 of the book: **Elliptic Integrals, Elliptic Functions and Modular Forms in Quantum Field Theory**; Editors: J. Blümlein, P. Paule and C. Schneider; Springer, 2019, p. 327-349, DOI

[43] *Supercongruences for polynomial analogs of the Apéry numbers*
Proceedings of the American Mathematical Society, Vol. 147, 2019, p. 1023-1036, DOI

[42] (with Frits Beukers, Marc Houben) *Gauss congruences for rational functions in several variables*
Acta Arithmetica, Vol. 184, 2018, p. 341-362, DOI

[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)*
Springer Proceedings in Mathematics & Statistics (From Analysis to Visualization: JBCC 2017), Vol. 313, 2020, p. 423–439, DOI

[39] (with Robert Osburn, Wadim Zudilin) *A modular supercongruence for $_6F_5$: An Apéry-like story*
Annales de l'Institut Fourier, Vol. 68, Nr. 5, 2018, p. 1987-2004, DOI

[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, #5, 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 R. 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 R. 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 π 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 Szegö's rational function*
Advances in Applied Mathematics, Vol. 41, Nr. 2, Aug 2008, p. 255-264, DOI

Research talks

2025, Oct 9 *(upcoming)*	Numbers à la Apéry and their remarkable properties Quebec-Vermont Number Theory Seminar, Montréal
2025, Oct 5 *(upcoming)*	Gessel-Lucas congruences for sporadic sequences AMS Fall Southeastern Sectional Meeting, Special Session on Modular Forms in Combinatorics and Number Theory, Tulane University
2025, Aug 1	Diagonal and constant term representations of sequences AN25—The Third Joint SIAM/CAIMS Annual Meetings, Minisymposium on Hypergeometric Series and Their Applications, Montréal
2024, Jun 8	An invitation to constant term sequences The Legacy of Ramanujan 2024: Celebrating the 85th birthdays of George Andrews & Bruce Berndt, Penn State University
2024, Mar 11	On the representability of sequences as constant terms International Conference on Modular Forms and q-Series, University of Cologne
2024, Feb 25	An invitation to constant term sequences Clifford Lectures 2024: The Web of Modularity, Tulane University
2023, Jul 19	Automatic Lucas-type congruences ACA 2023—28th International Conference on Applications of Computer Algebra, Session on D-Finite Functions and Beyond: Algorithms, Combinatorics, and Arithmetic, Warsaw (PL)
2022, Oct 6	Sums of powers of binomials, their Apéry limits, and Franel's suspicions Colloquium, Dalhousie University
2022, Sept 29	Gaussian binomial coefficients with negative arguments Colloquium, University of South Alabama
2022, Sept 18	Sums of powers of binomials, their Apéry limits, and Franel's suspicions AMS Fall Central Sectional Meeting, Special Session on The Intersection of Number Theory and Combinatorics, University of Texas at El Paso
2022, Jul 1	Sums of powers of binomials, their Apéry limits, and Franel's suspicions Joint Seminar: MATHEXP-PolSys & Transcendence and Combinatorics, Inria Saclay & Sorbonne University (FR)
2022, Jun 10	Lucas congruences and congruence schemes Combinatorics Seminar, University of Vienna (AT)
2022, Apr 27	Sums of powers of binomials, their Apéry limits, and Franel's suspicions Algorithmic Combinatorics Seminar, RISC, Johannes Kepler University (AT)
2022, Apr 25	Lucas congruences and congruence schemes RISC Colloquium, RISC, Johannes Kepler University (AT)
2022, Mar 12	Sums of powers of binomials, their Apéry limits, and Franel's suspicions **(invited plenary lecture)** Southern Regional Number Theory Conference, Louisiana State University
2021, Dec 8	Algebraic relations between modular functions Modular Forms Seminar, Tulane University
2021, Nov 17	Modular functions and the inevitable j-function Modular Forms Seminar, Tulane University
2020, Nov 2 *(virtual)*	Gaussian binomial coefficients with negative arguments **(invited plenary lecture)** International Conference on Mathematical Analysis and Applications (MAA 2020), National Institute of Technology Jamshedpur (IND)
2020, Mar 22 *(canceled due to covid)*	Gaussian binomial coefficients with negative arguments Southern Regional Number Theory Conference, Louisiana State University
2019, Nov 3	Interpolated sequences and critical L-values of modular forms AMS Fall Southeastern Sectional Meeting, Special Session on Partition Theory and Related Topics, University of Florida

2019, Jul 26	Negative thinking and polynomial analogs **(invited plenary lecture)** 15th International Symposium on Orthogonal Polynomials, Special Functions and Applications, RISC, Johannes Kepler University (AT)
2019, Jul 25	Interpolated sequences and critical L-values of modular forms 15th International Symposium on Orthogonal Polynomials, Special Functions and Applications, Minisymposium on Computer Algebra and Special Functions, RISC, Johannes Kepler University (AT)
2019, Jun 7	On the Gaussian binomial coefficients, the simplest of q-series **(invited plenary lecture)** Analytic and Combinatorial Number Theory: The Legacy of Ramanujan (in honor of Bruce Berndt's 80th birthday), UIUC
2019, Apr 14	Interpolated sequences and critical L-values of modular forms **(invited plenary lecture)** Southern Regional Number Theory Conference: Modular Curves, Modular Forms, and Hypergeometric Functions, Louisiana State University
2018, Oct 22	The congruences of Fermat, Euler, Gauss and stronger versions thereof Algebra and Number Theory Seminar, Louisiana State University
2018, Oct 5	Supercongruences for polynomial analogs of the Apéry numbers Integers Conference, Augusta University
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
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** **(invited 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$^{\text{nd}}$ 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, 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$^{\text{st}}$ 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 and outreach 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 π 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
2007, Dec 10	Nonstandard analysis Student Colloquium (StuVo) of the Mathematics Department, TU Darmstadt (DE)

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

Student mentoring

Graduate students who wrote a Master's thesis under my direction:

since 2024	Margery Davis — *TBA* in process
2018 – 2019	Joel Henningsen — *Sequences modulo primes and finite state automata* awarded a Ph.D. position at Baylor University, including teaching assistantship; joint follow-up paper on generalized Lucas congruences published in Advances in Applied Mathematics
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:

2025	Jason Yeszkonis introduced to a project on p-adic numbers and Hensel lifting
2019 – 2022	John Pomerat directed studies in Fall 2019 (Gröbner bases and their applications) and Spring 2020 (Number theoretic aspects of differential equations); awarded Goldwater scholarship; selected for 2020 REU Program at Maryland; joint paper on the integrality of powers of power series accepted for publication in Acta Arithmetica
2019 – 2020	Preston Stanfield (graduate student) introduced to a project on computer algebraic approaches to continued fractions; created poster for Annual Graduate Research Forum
2020	Jahdia Feurtado introduced to a project on integer partitions with a negative number of parts

2016 – 2019	Sam Formichella
	introduced to a project on q-binomial coefficients; awarded Summer Undergraduate Fellowship (SURF) 2017; published a first paper in JOURACA on a q-analog of Legendre's formula; second joint paper on q-binomials with negative arguments published in Annals of Combinatorics; awarded SURF 2018 (turned down); selected for 2018 REU Program at Auburn; several oral conference and poster presentations
2017, Spring	Kevin McKeown
	introduced to a project on periods of C-finite sequences; 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

Highschool students mentored:

2023 – 2024	Yu-Wei (Osmond) Lin
	introduced to probabilistic primality testing based on Fibonacci-type sequences; won 2nd place for presenting a poster on computationally comparing such primality tests for the Mobile Regional Science & Engineering Fair

Ph.D. Thesis Committee Member for the following students:

2024	José E. Calderón Gómez (advisor: Luis Medina, University of Puerto Rico)
since 2022	Reeve Cabral (advisor: Jeffrey T. McDonald, Computer Science)
2020 – 2022	Matthew Peterson (advisor: Todd R. Andel, Computer Science)
2019 – 2022	Colby B. Parker (advisor: Jeffrey T. McDonald, Computer Science)
2020	Edward Harshany (advisor: Ryan Benton, Computer Science)
2019 – 2020	Thomas H. Watts (advisor: Ryan Benton, Computer Science)

Master's Thesis Committee Member for the following students:

2021	Robert C. Cox (advisor: Ryan Benton, Computer Science)
2020	A. Austin Chandler (advisor: Ryan Benton, Computer Science)
2019 – 2020	James Bell (advisor: Jeffrey T. McDonald, Computer Science)
2019 – 2020	Joseph A. Mullins (advisor: Jeffrey T. McDonald, Computer Science)
2019 – 2020	Nathan B. Herron (advisor: Jeffrey T. McDonald, Computer Science)
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)

Honors Thesis Committee Member for the following students:

2024 – 2025	John G. Clark (advisor: Martin J. Frank, Physics)

Teaching experience

2025, Spring	Differential Equations I & Differential Equations II
2024, Fall	Calculus II, Differential Equations I & Differential Equations II
2024, Spring	Linear Algebra II & Cryptography
2023, Fall	Differential Equations I, Differential Equations II & Numerical Analysis
2023, Spring	Differential Equations II, Linear Algebra II & Cryptography
2022, Fall	Differential Equations I & Numerical Analysis
2021, Spring	Linear Algebra II & Cryptography

2020, Fall	Differential Equations II, Intro to Number Theory & Precalculus Algebra	
2020, Spring	Linear Algebra II & Cryptography	
2019, Fall	Differential Equations II, Intro to Number Theory & Calculus and its Applications	
2019, Spring	Calculus I, Linear Algebra II & Cryptography	
2018, Fall	Intro to Number Theory & Precalculus Algebra	
2018, Spring	Linear Algebra II & Cryptography	
2017, Fall	Calculus and its Applications	(3 sections)
2017, Spring	Linear Algebra II & Cryptography	
2016, Fall	Linear Algebra & Intro to Number Theory	(2+1 sections)
2016, Summer	Invited lecturer for the 2016 AARMS Summer School at Dalhousie University	
	designed and taught the graduate course *Introduction to Special Functions and WZ Theory*	
2016, Spring	Calculus III	(2 sections)
2015, Fall	Calculus II & Linear Algebra	

—————— University of Illinois at Urbana-Champaign ——————

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

—————— Tulane University ——————

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

—————— Early work as teaching assistant ——————

2007, Summer	Supervised undergraduate students on the research project "Experimental Mathematics" lead by Victor H. Moll, Tulane University
2006 – 2008	Course Assistant at Tulane University for

- Calculus I,
- Calculus II,
- Linear Algebra,
- Experimental Mathematics.

2004 – 2008	Course Assistant at TU Darmstadt for

- Numerical Analysis,
- Linear Algebra,
- Statistics,
- Stochastic Analysis,
- Algebra.

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)

2025	Editorial Contribution Award for contributions to The Ramanujan Journal Springer Nature	
2017 – 2024	Simons Collaboration Grant Simons Foundation	($42,000)
2021/2022	Sabbatical leave awarded for Fall 2021 and Spring 2022 College of Arts & Sciences, University of South Alabama	
2019	Junior Faculty Award for Scholarship and Academic Achievement College of Arts & Sciences, University of South Alabama	($1,500)
2019	Invited plenary speaker at OPSFA15 International Symposium on Orthogonal Polynomials, Special Functions and Applications (1 of 9 plenary speakers, 150+ parallel talks)	(travel funded)
2017	Arts & Sciences Support and Development Award College of Arts & Sciences, University of South Alabama	($1,500)
2015 – 2017	AMS-Simons Travel Grant American Mathematical Society & Simons Foundation	($4,800)
2016	Arts & Sciences Summer Professional Development Award College of Arts & Sciences, University of South Alabama	($1,000)
2015	SIAM Early Career Travel Award to attend OPSFA13 International Symposium on Orthogonal Polynomials, Special Functions and Applications	($650)
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	
2014	Invited plenary speaker at ICA2014 International Conference on Algebra and Number Theory, Samsun (TR)	(travel support)
2011, Jun	ISSAC 2011 Distinguished Student Author Award for the paper *Special values of generalized log-sine integrals* International Symposium on Symbolic and Algebraic Computation, San Jose	($300)
2011, May	"Excellence in Mathematics Graduate Student Award" Mathematics Department, Tulane University	($250)
2010, Apr	Poster *Random Walk Integrals* selected 1st place in Graduate Division School of Science and Engineering Research Day Poster Session, Tulane University	($250)
2009 – 2010	IBM Fellow in Computational Science Center for Computational Science, Tulane University	($4,000)
2007, Apr	"Outstanding First Year Graduate Student Award" Mathematics Department, Tulane University	(fine dinner)

Academic services and memberships

since 2025	Editor for The American Mathematical Monthly (Taylor & Francis) since April 1, 2025 (official 5-year term: 2026–2030) (5 papers handled)
since 2017	Editor for The Ramanujan Journal (Springer) (140+ papers handled)
since 2012	Reviewer for Mathematical Reviews (35 reviews)
since 2007	Referee for the following journals and proceedings:

- The Ramanujan Journal (10+ times)
- Journal of Mathematical Analysis and Applications (10+ times)
- International Journal of Number Theory (10+ times)
- The American Mathematical Monthly (14 times), Proceedings of the AMS (9 times), Acta Arithmetica (8 times), Journal of Symbolic Computation (6 times), Research in Number Theory (6 times), Bulletin of the London Mathematical Society (5 times), Journal of Combinatorial Theory Series A (5 times), Annals of Combinatorics (4 times), Discrete Mathematics (4 times), Integers (4 times), Journal of Difference Equations and Applications (4 times), Monatshefte für Mathematik (4 times), Advances in Applied Mathematics (3 times), Advances in Mathematics (3 times), Canadian Journal of Mathematics (3 times), Electronic Journal of Combinatorics (3 times), European Journal of Combinatorics (3 times), Journal of Number Theory (3 times), Rocky Mountain Journal of Mathematics (3 times), Ars Combinatoria (2 times), Pacific Journal of Mathematics (2 times), Proceedings of the Edinburgh Mathematical Society (2 times), Research in the Mathematical Sciences (2 times), Alabama Journal of Mathematics, Applied Mathematics Letters, Archiv der Mathematik, Arnold Mathematical Journal, Artificial Intelligence and Symbolic Computation, Bulletin of the Australian Mathematical Society, Colloquium Mathematicum, Combinatorial Theory, Communications in Number Theory and Physics, Compositio Mathematica, Comptes-Rendus de l'Académie des Sciences, Computer Physics Communications, Contemporary Mathematics, Experimental Mathematics, Expositiones Mathematicae, Indagationes Mathematicae, Israel Journal of Mathematics, Journal of Algebraic Combinatorics, Journal of the London Mathematical Society, Journal of Integer Sequences, Results in Mathematics, Séminaire Lotharingien de Combinatoire

2025	Organizing the special session *Experimental Mathematics* with Brandt Kronholm & Luis Medina at the 2025 AMS Fall Southeastern Sectional Meeting
2023	Organized the special session *Experimental Mathematics in Number Theory and Combinatorics* with Brandt Kronholm & Luis Medina at the 2023 AMS Fall Southeastern Sectional Meeting
2023	Co-organized the *30th USA/USM/SELU Mini-Conference on Undergraduate Research in Science and Mathematics* held at the University of South Alabama
2021 – 2022	Program committee member for *FPSAC 2022*
2021	Organized the special session *Experimental Mathematics in Number Theory and Combinatorics* with Luis Medina & Eric Rowland at the 2021 AMS Fall Southeastern Sectional Meeting
2019	Organized the special session *Experimental Mathematics in Number Theory and Combinatorics* with Hannah Burson & Tim Huber at the 2019 AMS Fall Southeastern Sectional Meeting
2019	Organized the special session *Experimental Mathematics in Number Theory, Analysis, and Combinatorics* with Amita Malik at the 2019 AMS Spring Southeastern Sectional Meeting

2018 – 2019	Program committee member for *FPSAC 2019*
2018	Co-organized the *27th USA/USM/SELU Mini-Conference on Undergraduate Research in Science and Mathematics* 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
2014 – 2015	Reviewer for the NSA Mathematical Sciences Grant Program (2 reviews)
since 2007	Member of the American Mathematical Society (AMS)
since 2013	Member of the Society for Industrial and Applied Mathematics (SIAM)
since 2025	Member of the Mathematical Association of America (MAA)

Departmental and university service

2025	University Academic Computing Committee
2024 – 2025	Reappointment Committee (chair)
since 2023	Advisory Committee
2022 – 2025	Scholarship Committee (chair)
2024	Arts & Sciences Faculty Awards Committee (chair)
2023	Hiring Committee for three tenure-track positions (chair)
2016, 2018, 2020, 2024	Judge for the Mobile Regional Science & Engineering Fair
2022	Arts & Sciences Sabbatical Committee
2017 – 2021	Scholarship Committee (chair)
2021	Hiring Committee for three tenure-track positions
2020, 2021	Joe & Audrey Shewmake Computing and Math Scholarship Committee
2019, 2020	Arts & Sciences Faculty Awards Committee
2017 – 2018	Arts & Sciences Support and Development Awards Committee
2016 – 2017	Hiring Committee for two tenure-track positions
2016 – 2017	Scholarship Committee
2016 – 2017	Arts & Sciences Summer Professional Development Committee
2015 – 2016	Library Committee (chair)

——— before University of South Alabama ———

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

Other qualifications

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