Curriculum vitae of Tom Cuchta

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EDUCATION

Ph.D. Mathematics
Missouri University of Science and Technology
Rolla, MO (2015)
Advisor: Dr. Martin Bohner

M.A. Mathematics
Marshall University
Huntington, WV (2011)
Advisor: Dr. Bonita Lawrence

B.S. Mathematics; *B.S.* Applied Mathematics
Marshall University
Huntington, WV (2009)

PUBLICATIONS

[1] Tom Cuchta, David Grow, Nick Wintz. Divergence criteria for matrix generalized hypergeometric functions. *Proc. Am. Math. Soc.* To appear, 2021.

[2] Tom Cuchta and Sabrina Streipert. A discrete SIS model of fractional order. *Int. J. Dyn. Syst. Differ. Equ.* To appear, 2021.

[3] Tom Cuchta and Svetlin Georgiev. Analysis of the bilateral Laplace transform on time scales with applications. *Int. J. Dyn. Syst. Differ. Equ.* To appear, 2021.

[4] Tom Cuchta, Robert Jon Niichel, and Sabrina Streipert. A Gompertz distribution for time scales. *Turk. J. Math.*, 45(1):185–200, 2021.

[5] Tom Cuchta and Brooke Fincham. Some new Gompertz fractional differ-ence equations. *Involve*, 13(4):705–719, 2020.

[6] F. Ayça Çetinkaya and Tom Cuchta. Sturm–Liouville and Riccati Conformable Dynamic Equations. *Adv. Dyn. Syst. Appl.*, 15(1):1–13, 2020.

[7] Samer Assaf, Tom Cuchta, and Matt Insall. Binary metrics. *Topol. Appl.*, 274:107116, 2020.

[8] Tom Cuchta, Michael Pavelites, and Randi Tinney. The Chebyshev Difference Equation. *Mathematics*, 8(1), 74, 2020.

[9] Tom Cuchta and Sabrina Streipert. Dynamic Gompertz Model. *Appl. Math. Info. Sci.*, 14(1):1–9, 2020.

[10] Tom Cuchta, David Grow, and Nick Wintz. A dynamic matrix exponential via a matrix cylinder transformation. *J. Math. Anal. Appl.*, 479(1):733–751, 2019.

[11] Tom Cuchta, et al. Human risk factors in cybersecurity. In *Proceedings of the 20th Annual SIG Conference on Information Technology Education, SIGITE '19*, pages 87–92, New York, NY, USA, 2019. ACM.

[12] Martin Bohner and Tom Cuchta. The generalized hypergeometric difference equation. *Demonstr. Math.*, 51:62–75, 2018.

[13] Martin Bohner and Tom Cuchta. The Bessel difference equation. *Proc. Am. Math. Soc.*, 145(4):1567–1580, 2017.

[14] Tom Cuchta. Discrete analogues of some classical special functions. PhD thesis, Missouri University of Science and Technology, 2015.

[15] Tom Cuchta. Infinitesimal time scale calculus. Master's thesis, Marshall University, 2011.

[16] Mike Axtell, et al. Zero-divisor ideals and realizable zero-divisor graphs. *Involve* 2, No. 1, 17–27, 2009.

[17] Abigail Bishop, Tom Cuchta, and Kathryn Lokken, and Oliver Pechenik. The nilradical and non-nilradical graphs of commutative rings. *Int. J. Algebra*, 2(17-20):981–994, 2008.

[18] Tom Cuchta, Kathryn Lokken, and William Young. Zero-divisor graphs of localizations and modular rings. *Rose-Hulman Undergraduate Math Journal*, 9(2), 2008.

GRANTS

1. (2021 March–2021 July) WV NASA Space Grant Consortium project: "*Multi-valued Matrix Logarithm and Matrix Inverse Trigonometric Functions on Time Scales*" ($3287.50)
2. (2020 Nov–2021 Mar) WV NASA Space Grant Consortium project: "*Discrete Meijer G*" ($2878)
3. (2019 Apr) Fairmont State University Foundation Grant Award ($1000)
4. (2018 Nov–Present) (*Principal Investigator*) NASA SARP Grant in cybersecurity, NSSC Grant number 80NSSC19K0178 ($26,300) (with Brian Blackwood, Tom Devine, and Robert J. Niichel)
5. (2017 Nov) Grant from NVIDIA Corporation for a Titan XP graphics processing unit (∼$1,000) (with Brian Blackwood and Robert J. Niichel)
6. (2017 Aug–2018 Jul) Grant from TMC Technologies of West Virginia Corp. subcontract number TMC-2017-002-10 NASA Technical Expertise Support Services (TESS) Issued Under Prime Contract: NNG4SA05Z ($23,750) (with Brian Blackwood and Robert J. Niichel)

Student WV NASA Space Grant Consortium Awards Mentored

1. (2020 Nov–2021 Mar) Becky Luketic: "*Discrete Legendre polynomials*"
2. (2020 Nov–2021 Mar) Dallas Freeman: "*Discrete polylogarithm functions*"
3. (2019 Oct–2020 Apr) Brooke Fincham: "*Discrete fractional population models*"

TEACHING EXPERIENCE

Assistant Professor of Mathematics (2016 Fall-present)
Fairmont State University (Fairmont, WV)

Course	Number of sections taught through Fall 2020
Undergraduate Research	6
Real Analysis	2
Complex Variables	1
Differential Equations	1
Linear Algebra	2
Calculus 3	2
Calculus 2	3
Mathematical Logic	4
Calculus 1	2
Applied Calculus 2	1
Intro to Programming	2
Trigonometry	8
Applied Statistics	3
College Algebra	2
Applied Tech Math I	1
Pre-College Algebra	1

Instructor (2016 Spring-2016 Summer)
Missouri University of Science and Technology (Rolla, MO)

Course	Number of sections taught
Calculus 3	1
"Hit the Ground Running"	1

Teaching Assistant (2011 Fall-2016 Spring)
Missouri University of Science and Technology (Rolla, MO)

Course	Number of sections taught
Linear Algebra	4
Differential Equations	1
Calculus 3	7
Calculus 1	2
"Problem Solving Workshop"	2
"Hit the Ground Running"	2

Teaching Assistant (2009 Fall-2011 Summer)
Marshall University (Huntington, WV)

Course	Number of sections taught
Trigonometry	3
College Algebra	2
Finite Math	1
Concepts and Applications of Mathematics	1

Project NExT workshops attended

(2020 Sep)	resampling in basic stats & activity-based learning online	(virtual)
(2019 Sep)	mastery based grading	Slippery Rock, PA
(2018 Sep)	student issues and concerns & using the instructional practices guide	California, PA
(2017 Sep)	engagement and grading	Grove City, PA
(2017 Apr)	expository writing	Pittsburgh, PA
(2016 Oct)	teaching statistics	Wooster, OH
(2016 Sep)	teaching math to liberal arts majors	Indiana, PA

SERVICE

To profession

Peer Review

1. (2021) 3 papers
2. (2020) 40 papers

3. (2019) 27 papers
4. (2018) 5 papers
5. (2017) 6 papers
6. (2016) 2 papers

(2019–Present) Writer for *Mathematical Reviews*

- (2021) 1 review
- (2020) 6 reviews
- (2019) 6 reviews

Reviewer for

1. Advances in Difference Equations
2. Advances in the Theory of Nonlinear Analysis and its Application
3. Axioms
4. Filomat
5. International Journal of Dynamical Systems and Differential Equations
6. Journal of Classical Analysis
7. Journal of Difference Equations and Applications
8. Journal of Fixed Point Theory and Applications
9. Journal of Inequalities and Special Functions
10. Journal of Mathematics and Computer Science
11. Journal of Mathematics and Statistics
12. Journal of Nonlinear Sciences and Applications
13. Journal of the Egyptian Mathematical Society
14. Malaysian Journal of Mathematical Sciences
15. Mathematical Population Studies
16. Mathematics
17. Numerical Methods for Partial Differential Equations
18. Real Analysis Exchange
19. Symmetry
20. Turkish Journal of Mathematics
21. TWMS Journal of Applied and Engineering Mathematics

To the Mathematical Association of America

1. (2020 Fall–Present) Colloquium Committee (chair)
2. (2019 Fall) Nominating Committee
3. (2018 Apr–Present) Allegheny Mountain Section Director of E-Communications
4. (2018 Spring) Allegheny Mountain Section 2018 Teaching Award Committee

To Fairmont State University

1. Undergraduate research
   a. (2021 Spring–Present) Jacob Branch (monodiffric functions)
   b. (2020 Fall–2021 Spring) Becky Luketic and Dallas Freeman (discrete special functions)
   c. (2019 Summer–2020 Spring) Brooke Fincham (discrete fractional population models)
   d. (2019 Spring, 2019 Fall) Michael Pavelites (discrete special functions)
   e. (2019 Spring, 2019 Fall) Kristina Daniels, Caleb Lutjens, Sydney Maibach, and Ryan Stephenson (NASA IV&V SARP grant)
   f. (2018 Fall–2019 Summer) Matthias Baur (`timescalecalculus` package)
   g. (2018 Fall) Randi Tinney (discrete special functions)
   h. (2017 Fall, 2018 Spring) Mattison Johnson, Dawn Sargent, Carl Wahler, and Anna Westfall (TMC^2 Technologies grant)
   i. (2017 Fall, 2018 Spring) Zack Linger (zeta functions on time scales)
   j. (2017 Fall) Treston Brown (discrete special functions)
   k. (2016 Fall) Antonietta Bonanno (educational methods in geometry)
2. Wrote letters of recommendation for internships, graduate school applications, tenure & promotion, and job applications
   a. (2021) 11 letters across 3 individuals
   b. (2020) 19 letters across 6 individuals
   c. (2019) 35 letters across 9 individuals
   d. (2018) 4 letters across 3 individuals
   e. (2017) 1 letter
3. Organized student trips
   a. (2020) Pi Mu Epsilon conference, Youngstown, OH (5 students)
   b. (2019) Marshall University differential analyzer, Huntington, WV (5 students); Pi Mu Epsilon conference, Youngstown, OH (3 students); Miami University of Ohio Annual Conference, Oxford, OH (1 student)
   c. (2018) Allegheny Mountain MAA conference, Erie, PA (4 students); Pi Mu Epsilon conference, Youngstown, OH (7 students)
   d. (2017) Ohio MAA conference, St. Clairsville, OH (1 student); Marshall University differential analyzer, Huntington, WV (4 students); Pi Mu Epsilon conference, Youngstown, OH (4 students)
4. (2016–2019) Organized visiting lecturers for department seminars
5. Committee/etc work
   a. (2019 Spring–Present) Creative Sustainability Council
   b. (2018 Fall–Present) Coordinator of Calculus assessment
   c. (2018 Fall–Present) Technology Committee
   d. (2017 Fall–Present) Student Publications Board
   e. (2018 Fall–2020 Spring) Institutional Review Board
   f. (2017 Spring) Mathematics program advisory board committee

6. Faculty Senate
    a. (2021 Spring, 2020 Spring) Faculty Senate Committee on Committees (chair)
    b. (Fall 2020–Present) Faculty Senate Bylaws Committee
    c. (2019 Fall–2021 Spring) Faculty Senate Executive Committee (Webmaster)
    d. (2019 Spring, 2018 Spring) Faculty Senate Committee on Committees (member)
    e. (2018 Fall–2019 Spring) Faculty Senate Executive Committee (at large member)
    f. (2017 Spring–Present) Senator for the Department of Computer Science and Math to Faculty Senate
7. (2020 Fall–Present) Operator of the `csmath.fairmontstate.edu` server, including WeBWork and RStudio services for math classes

CONFERENCES

1. (2021 Jul) International Conference on Difference Equations and Applications, University of Sarajevo, Sarajevo, Bosnia & Herzegovina. (virtual attendance)
2. (2021 Apr) Allegheny Mountain MAA Meeting, Edinboro, PA. (virtual attendance)
3. (2020 Aug) Dynamic equations on time scales workshop, Będlewo, Poland. (virtual attendance)
4. *(2020 May) 95th Annual WV Academy of Sciences Meeting, Fairmont, WV (plenary speaker)* *cancelled*
5. (2019 Sep) Miami University 47th Annual Math Conference: Differential Equations and Dynamical Systems and their Applications, Oxford, OH.
6. (2019 Jul) International Conference on Differential & Difference Equations and Applications, Lisbon, Portugal.
7. (2019 Jun) Dynamic equations on time scales workshop, Mathematical conference centre, Będlewo, Poland. (plenary speaker)
8. (2019 Apr) Allegheny Mountain MAA Meeting, Shepherd University, Shepherdstown, WV.
9. (2019 Jan) Joint Math Meetings, Baltimore, MD.
10. (2018 Aug) International Workshop on Nonlinear Dynamical Systems and Functional Analysis, University of Brasília, Brasília, Brazil.
11. (2018 Apr) Allegheny Mountain MAA Meeting, Penn State Behrend, Erie, PA.
12. (2017 Oct) Ohio MAA Meeting, Ohio University Eastern, St. Clairsville, OH.
13. (2017 Jul) International Conference on Difference Equations and Applications, West University of Timişoara, Timişoara, Romania.
14. (2017 Apr) Allegheny Mountain MAA Spring Meeting, Duquense University Pittsburgh, PA.
15. (2016 Oct) Ohio MAA Fall Meeting, Wooster College, Wooster, OH.
16. (2015 Mar) Missouri MAA Spring Meeting, Missouri University of Science & Technology, Rolla, MO.
17. (2014 May) Conference of Partial Differential Equations, Abbazia di Novacella, Novacella, Italy.

OTHER ACADEMIC ACTIVITIES

(2020 Sep–Present)	Member of SIAM
(2019 Sep–Present)	Member of West Virginia Academy of Sciences
(2019 Sep–Present)	Member of American Mathematical Society
(2019 Apr)	Exam writer and grader for WV Math Field Day (Fairmont, WV)
(2018 Apr)	Volunteer scorer at WV Math Field Day (Huntington, WV)
(2017–present)	Member of Mathematical Association of America
(2014–present)	Member of International Society of Difference Equations
(2011–2014)	Chancellor's Fellow at Missouri S&T

Miscellaneous

1. Maintainer of an open source Python project on GitHub for time scale calculus: `https://github.com/tomcuchta/timescalecalculus`

2. Owner and operator of...
   - Time Scale wiki (`http://timescalewiki.org`)
   - Special Functions wiki (`http://specialfunctionswiki.org`)
   - Hyperspace wiki (`http://hyperspacewiki.org`)

3. Maintainer of a solutions manual to Rainville's *Special Functions* (`https://github.com/tomcuchta/rainvillesfsolutions`).