Eric M. Evert **December 2025**

CONTACT INFORMATION

Department of Mathematics
University of Florida
Gainesville, FL 32611

ericevert@ufl.edu
http://ericevert.com

RESEARCH INTERESTS

Functional Analysis, Matrix Convex Sets, Extreme Points, Free Spectrahedra, Noncommutative Polynomials, Tensors, Multilinear Algebra, Low Rank Approximation

EDUCATION

University of California, San Diego, La Jolla, CA

Ph.D., Mathematics, September 2018

Dissertation Topic: *Extreme Points of Matrix Convex Sets*
Advisor: J. William Helton, Ph.D

Virginia Tech, Blacksburg, VA

B.S., Mathematics, May 2013

Summa Cum Laude
Honors Scholar

Honors Societies

Phi Beta Kappa
Pi Mu Epsilon

PROFESSIONAL EXPERIENCE

Assistant Professor August 2024 to Present
Department of Mathematics,
University of Florida

Shaw Family CS+X Postdoctoral Fellow September 2022 to August 2024
Department of Computer Science,
Northwestern University
Supervisor: Aravindan Vijayaraghavan, Ph.D

Postdoctoral Researcher August 2018 to August 2022
Group Science, Engineering and Technology,
KU Leuven, Kulak
Supervisor: Lieven De Lathauwer, Ph.D

Research Assistant June 2013 to August 2018
Department of Mathematics,
UC San Diego
Supervisor: J. William Helton, Ph.D

REU Summer 2012
Department of Mathematics,
Central Michigan University
Supervisor: Sivaram K. Narayan, Ph.D

REFEREED JOURNAL PUBLICATIONS

1. **E. Evert**: *Free extreme points span generalized free spectrahedra given by compact coefficients*, J. Math. Anal. Appl. **545** (2025) 129170
https://doi.org/10.1016/j.jmaa.2024.129170

2. **E. Evert**, B. Passer, T. Štrekelj: *Extreme points of matrix convex sets and their spanning properties.* (2024) In: Alpay, D., Sabadini, I., Colombo, F. (eds) Operator Theory. Springer, Basel.

3. A. Epperly, **E. Evert**, J.W. Helton, I. Klep: *Matrix extreme points and free extreme points of free spectrahedra*, published online in Optim. Methods Softw. (2024). https://doi.org/10.1080/10556788.2024.2339221

4. Domanov I., Vervliet N., **E. Evert**, L. De Lathauwer: *Decomposition of a tensor into multilinear rank-$(M_r, N_r, \cdot)$ terms*, SIAM J. Matrix Anal. Appl. **45** (2024) 1310–1334. https://doi.org/10.1137/23M1557246.

5. **E. Evert**, L. De Lathauwer: *On best low rank approximation of positive definite tensors* , SIAM J. Matrix Anal. & Appl. **44** (2023) 867–893. https://doi.org/10.1137/22M1494178

6. **E. Evert**, S. McCullough, T. Štrekelj, A. Vershynina: *Convexity of a certain operator trace functional*, Linear Algebra Appl. **643** (2022) 218–234. https://doi.org/10.1016/j.laa.2022.02.033

7. **E. Evert**, M. Vandecappelle, L. De Lathauwer: *Canonical polyadic decomposition via the generalized Schur decomposition*, IEEE Signal Process. Lett. **29** (2022) 937–941. https://doi.org/10.1109/LSP.2022.3156870

8. **E. Evert**, M. Vandecappelle, L. De Lathauwer: *A recursive eigenspace computation for the canonical polyadic decomposition*, SIAM J. Matrix Anal. Appl. **43** (2022) 274–300. https://doi.org/10.1137/21M1423026

9. **E. Evert**, L. De Lathauwer: *Guarantees for existence of a best canonical polyadic approximation of a noisy low-rank tensor*, SIAM J. Matrix Anal. Appl. **43** (2022) 328–369. https://doi.org/10.1137/20M1381046

10. **E. Evert**, Y. Fu, J.W. Helton, J. Yin: *Empirical properties of optima in free semidefinite programs*, published online in Experimental Mathematics (2021). https://doi.org/10.1080/10586458.2021.1980457

11. **E. Evert**: *The Arveson boundary of a free quadrilateral is given by a noncommutative variety*, Operators and Matrices. **15** (2021) 1351–1378. https://dx.doi.org/10.7153/oam-2021-15-85

12. **E. Evert**, J.W. Helton, S. Huang, J. Nie: *Efficient evaluation of noncommutative polynomials using tensor and noncommutative Waring decompositions*, Numer. Funct. Anal. Optim. **42** (2021) 39–68. https://doi.org/10.1080/01630563.2020.1859530

13. **E. Evert**, J.W. Helton: *Arveson extreme points span free spectrahedra*, Math. Ann. **375** (2019) 629–653. https://doi.org/10.1007/s00208-019-01858-9

14. **E. Evert**: *Matrix convex sets without absolute extreme points*, Linear Algebra Appl. **537** (2018) 287–301. https://doi.org/10.1016/j.laa.2017.09.033

15. **E. Evert**, J.W. Helton, I. Klep, S. McCullough: *Extreme points of matrix convex sets, free spectrahedra and dilation theory*, J. of Geom. Anal. **28** (2018) 1373–1498. https://doi.org/10.1007/s12220-017-9866-4

16. **E. Evert**, J.W. Helton, I. Klep, S. McCullough: *Circular free spectrahedra*, J. Math. Anal. Appl. 445 (2017) 1047–1070. https://doi.org/10.1016/j.jmaa.2016.07.011

17. K. Berry, M.S. Copenhaver, **E. Evert**, Y.H. Kim, T. Klingler, S.K. Narayan, S.T. Nghiem: *Factor posets of frames and dual frames in finite dimensions*, Involve 9 (2017) 237–248 http://dx.doi.org/10.2140/involve.2016.9.237

PREPRINTS

18. **E. Evert**, B. Passer: *Matrix convex sets over the Euclidean ball and polar duals of real free spectrahedra*, preprint https://arxiv.org/abs/2507.20325

Conference Papers

19. A. Bhaskara, **E. Evert**, V. Srinivas, A. Vijayaraghavan: *New Tools for Smoothed Analysis: Least Singular Value Bounds for Random Matrices with Dependent Entries*, Proceedings of the 56th Annual ACM Symposium on Theory of Computing (STOC), June 2024. https://doi.org/10.1145/3618260.3649765

20. **E. Evert**, M. Vandecappelle, L. De Lathauwer: *CPD computation via recursive eigenspace decompositions*, IEEE International Conference on Acoustics, Speech, and Signal Processing (ICASSP), May 2022. https://doi.org/10.1109/ICASSP43922.2022.9747288

21. **E. Evert**, Vervliet N., Domanov I., L. De Lathauwer: *Uniqueness result and algebraic algorithm for decomposition into multilinear rank-$(M_r, N_r, \cdot)$ terms and joint block diagonalization*, IEEE International Workshop on Computational Advances in Multi-Sensor Adaptive Processing (CAMSAP), December 2023. https://ftp.esat.kuleuven.be/pub/stadius/nvervliet/evert2023uniquenessresult.pdf

Programming

E. Evert, A. Epperly M. de Oliveira, J. Yin, and J.W. Helton: NCSE 3.1.2: A Mathematica paclet for computations on free spectrahedra, July 2025. Available online. https://github.com/NCAlgebra/UserNCNotebooks/tree/master/NCSpectrahedronExtreme

Science communication

E. Evert, L. De Lathauwer: *Tensors and multilinear algebra: what and why*, Leuven.AI Stories, 2023. https://ai.kuleuven.be/stories/post/2023-01-10-tensorlab/

Presentations

Invited Conference Talks

International Workshop on Operator Theory and its Applications	July 2025
Free Analysis and Non-commutitve Algebra Workshop at the Banff International Research Station	May 2025
Canadian Mathematical Society Winter Meeting	December 2023
IEEE International Workshop on Computational Advances in Multi-Sensor Adaptive Processing	December 2023
Conference of the International Linear Algebra Society	June 2023
SIAM Conference on Optimization	May 2023
Amer. Math Soc. Annual Meeting (JMM)	January 2023
International Symposium on Mathematical Theory of Networks and Systems	September 2022
Conference of the International Linear Algebra Society	June 2022
IEEE International Conference on Austics, Speech, and Signal Processing	May 2022
Operator theory talks for early researchers meeting	January 2022
Matrix Equations and Tensor Techniques IX	September 2021
International Workshop on Operator Theory and its Applications	August 2021
SIAM Conference on Applied Linear Algebra	May 2021
2TART Online Conference	June 2020
The International Council for Industrial and Applied Mathematics	July 2019
International Workshop on Operator Theory and its Applications	July 2018
Amer. Math Soc. Annual Meeting (JMM)	January 2018
Mathematics, Signal Processing and Linear Systems: New Problems and Directions	November 2017
International Workshop on Operator Theory and its Applications	July 2016

Contributed Conference Talks

South Eastern Analysis Meeting 41	March 2025
International Workshop on Operator Theory and its Applications	July 2019
Great Plains Operator Theory Symposium	May 2018
Great Plains Operator Theory Symposium	May 2017

Other Talks

UT Austin Data & Algebra Seminar	March 2025
Structured Low-Rank Matrix/Tensor Approximation seminars at KU Leuven	July 2021, October 2019
Seminar at Tensor Methods and Emerging Applications to the Physical and Data Sciences long program hosted by Institute for Pure & Applied Mathematics	April 2021
Talks in Seminars at UC, San Diego	

Research Programs

Noncommutative Inequalities, hosted by American Institute of Mathematics	June 2021
Tensor Methods and Emerging Applications to the Physical and Data Sciences, hosted by Institute for Pure & Applied Mathematics	March-June 2021

Schools

Summer School in Algebraic Statistics, hosted by The Arctic University of Norway	September 2018
EURASIP Summer School on Tensor-Based Signal Processing, hosted by KU Leuven	August 2018

Teaching Experience

University of Florida (Instructor)	Fall 2024 to Present
MAA 4402: Complex Analysis	Fall 2025
MAA 6407: Complex Analysis	Spring 2025
MAA 6406: Complex Analysis	Fall 2024
Northwestern (Instructor)	Fall 2022 to Spring 2023
CS 496: Mathematical and Computational Foundations of Tensors and Applications	Spring 2023
CS 212: Mathematical Foundations of Computer Science	Fall, Winter 2023 Fall 2022
UC San Diego (Teaching Assistant)	Fall 2013 to June 2018
Math 152: Applicable Math and Computing	Winter 2018
Math 202A: Applied Algebra	Fall 2017
Math 245C: Convex Analysis and Optimization	Spring 2017
Math 202B: Applied Algebra II	Winter 2017
Math 18: Linear Algebra	Fall 2016
Math 10C: Calculus III	Winter 2015
Math 20C: Calculus and Analytic Geometry for Science and Engineering	Fall 2013, Spring 2014

	Math 20D: Introduction to Differential Equations	Fall 2014, Winter 2016
	Math 20B: Calculus for Science and Engineering	Winter 2014, Fall 2015

Computational Experience

Computer Programming:
- Mathematica
- Noncommutative Computer Algebra
- Lead author of NCSE package for NCAlgebra
- Matlab
- Tensorlab
- Semidefinite and Linear Programming

Awards

UC San Diego, Department of Mathematics
- Powell Dissertation Fellowship — December 2017

Virgina Tech, Department of Mathematics
- Department of Mathematics Outstanding Senior — May 2013

Professional Memberships

American Mathematical Society
International Linear Algebra Society
Society for Industrial and Applied Mathematics