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JOB HISTORY AND EDUCATION:

- **TEXAS A&M UNIVERSITY: Professor**, 2014–, **Associate Professor**, 2009–2014, **Assistant Professor**, 2005–2009.
- UNIVERSITY OF CALIFORNIA, RIVERSIDE: **Assistant Professor**, 2002–2005.
- UNIVERSITY OF CALIFORNIA, BERKELEY: **NSF postdoctoral fellow**, 2000–2002.
- MATHEMATICAL SCIENCES RESEARCH INSTITUTE: **Postdoctoral fellow**, Spring 2001.
- UNIVERSITY OF CALIFORNIA, BERKELEY: **Ph.D. in Mathematics**, May 2000, under the supervision of Dan-Virgil Voiculescu; **M.A. in Statistics**, May 1997.
- CALIFORNIA INSTITUTE OF TECHNOLOGY: B.S. with honors (Mathematics), June 1994.

GRANTS AND FELLOWSHIPS:

- Simons Foundation Collaboration Grant for Mathematicians (PI), 2017–2024.
- NSF grants **DMS-1160849** (PI), 2012–2016, **DMS-0900935** (PI), 2009–2013, **DMS-0400860** (PI), 2004–2006 (transferred to Texas A&M as DMS-0613195, 2005–2008).
- Conference grants: NSF grant DMS-1900745 (co-PI with Ken Dykema, David Kerr, Zhi-zhang Xie, and Michael Brannan) for the GPOTS 2019; NSF grant DMS-0855328 and IMA Participating Institutions conference grant (co-PI with Ken Dykema, David Kerr, and Roger Smith) for the Seventh ECOAS, 2009.
- NSF postdoctoral fellowship, 2000–2004.
- Fannie and John Hertz Foundation Fellowship, 1994–1999.

RESEARCH INTERESTS:

- Functional analysis, operator algebras, free probability theory.
- Probability theory, stochastic processes.
- Combinatorics, orthogonal polynomials, umbral calculus.

RECENT PUBLICATIONS (38 TOTAL):

- HERMITE TRACE POLYNOMIALS AND CHAOS DECOMPOSITIONS FOR THE HERMITIAN BROWNIAN MOTION (with David Buzinski), arXiv:2207.13180 [math.PR].
- FOCK REPRESENTATION OF FREE CONVOLUTION POWERS (with Jacob Mashburn), arXiv:2207.12481 [math.OA], accepted for publication by the *Journal of Operator Theory*.
- PRODUCT OF EXPONENTIALS CONCENTRATES AROUND THE EXPONENTIAL OF THE SUM (with Austin Pritchett), *American Mathematical Monthly* **130** (2023), 503–514.
- SOME FOCK SPACES WITH DEPTH TWO ACTION (with Jacob Mashburn), arXiv:2103.13936 [math.OA].

- HIGHER VARIATIONS FOR FREE LÉVY PROCESSES (with Zhichao Wang), *Studia Mathematica* **252** (2020) 49–81.
- PRODUCT FORMULAS ON POSETS, WICK PRODUCTS, AND A CORRECTION FOR THE q -POISSON PROCESS, *Indiana University Mathematics Journal* **69** (2020) 2129–2170.
- OPERATOR-VALUED JACOBI PARAMETERS AND EXAMPLES OF OPERATOR-VALUED DISTRIBUTIONS (with John D. Williams), *Bulletin des Sciences Mathématiques* **145** (2018) 1–37.
- EXPANSION OF PERMUTATIONS AS PRODUCTS OF TRANSPOSITIONS (with Matthew Gaikema, Madeline Hansalik, Songyu He, and Nathan Mehlhop), arXiv:1702.06093 [math.CO].
- THE EXPONENTIAL MAP IN NON-COMMUTATIVE PROBABILITY (with Octavio Arizmendi), *International Mathematics Research Notices* **2017** (17) 5302–5342.
- OPERATOR-VALUED MONOTONE CONVOLUTION SEMIGROUPS AND AN EXTENSION OF THE BERCOVICI-PATA BIJECTION (with John D. Williams), *Documenta Mathematica* **21** (2016) 841–871.
- A CHARACTERIZATION OF ULTRASPHERICAL, HERMITE, AND CHEBYSHEV POLYNOMIALS OF THE FIRST KIND, *Integral Transforms And Special Functions* **27** (2016) 307–317.
- FREE EVOLUTION ON ALGEBRAS WITH TWO STATES II, *Pacific Journal of Mathematics* **276** (2015) 257–280.
- LOCAL LIMIT THEOREMS FOR MULTIPLICATIVE FREE CONVOLUTIONS (with Jiun-Chau Wang and Ping Zhong), *Journal of Functional Analysis* **267** (2014) 3469–3499.
- LIMIT THEOREMS FOR MONOTONIC CONVOLUTION AND THE CHERNOFF PRODUCT FORMULA (with John D. Williams), *International Mathematics Research Notices* **2014** (11) 2990–3021.
- CONVOLUTION POWERS IN THE OPERATOR-VALUED FRAMEWORK (with Serban T. Belinschi, Maxime Fevrier, and Alexandru Nica), *Transactions of the American Mathematical Society* **365** (2013) 2063–2097.
- GENERATORS OF SOME NON-COMMUTATIVE STOCHASTIC PROCESSES, *Probability Theory and Related Fields* **157** (2013) 777–815.

ORGANIZER:

- TX-LA Undergraduate Mathematics Conference (with Matt Papanikolas, Matt Young, Daniel Onofrei, William Ott, Stephen Shipman, and Andrew Török), Texas A&M University, October 2019.
- Great Plains Operator Theory Symposium (with Ken Dykema, Michael Brannan, David Kerr, David Larson, Roger Smith, Zhizhang Xie, and Guoliang Yu), Texas A&M University, May 2019.
- Special session on FREE PROBABILITY AND ITS APPLICATIONS (with Octavio Arizmendi and James Mingo). Mathematical Congress of the Americas, Montreal, Canada, July 2017.
- Concentration Week on FREE PROBABILITY (with Ken Dykema and John Williams). Workshop in Analysis and Probability, Texas A&M University, July 2014.
- AMS Special session on STOCHASTIC PROCESSES IN NONCOMMUTATIVE PROBABILITY (with Todd Kemp). Albuquerque, April 2014.

- Special session on FREE PROBABILITY (with Víctor Pérez-Abreu). Mathematical Congress of the Americas, Guanajuato, Mexico, August 2013.
- Research In Teams on SUBORDINATION PROBLEMS RELATED TO FREE PROBABILITY (with Serban Belinschi, Maxime Fevrier, and Alexandru Nica). BIRS, Banff, August 2010.
- Concentration Week on ORTHOGONAL POLYNOMIALS IN PROBABILITY THEORY (with Jinho Baik and Roland Speicher). Workshop in Analysis and Probability, Texas A&M University, July 2010.
- SEVENTH EAST COAST OPERATOR ALGEBRAS SYMPOSIUM (with Ken Dykema, David Kerr, and Roger Smith). Texas A&M University, October 2009.
- Educational Concentration Week on FREE PROBABILITY THEORY (with Ken Dykema). Workshop in Analysis and Probability, Texas A&M University, July 2007.
- LINEAR ANALYSIS SEMINAR. Texas A&M University, fall 2011, fall 2012, spring 2013.
- FREE PROBABILITY SEMINAR. Texas A&M University, 2005–2019.

TEACHING EXPERIENCE:

- **Lower-division courses:** First-Year Calculus, Engineering Mathematics (*summer 1999, fall 2002, spring 2005, fall 2007, fall 2008, fall 2010, spring 2012, fall 2012, spring 2014, fall 2016 (2), fall 2020*), Foundations of Mathematics (*fall 2013, spring 2015, spring 2019, spring 2020, spring 2021, spring 2022*), Calculus of Several Variables (*winter 2005, fall 2011*).
- **Upper-division courses:** Differential Equations (*spring 2003, spring 2009, fall 2009*), Linear Algebra, Topics in Applied Mathematics, Linear Algebra II (*fall 2001, spring 2006, fall 2006 (2), spring 2008, fall 2008, fall 2009, spring 2010, spring 2013, fall 2017, fall 2019 (2)*), Introduction to Complex Variables (*spring 2003*), Probability and Mathematical Statistics (*fall 2003, fall 2015*), Numerical Analysis (*fall 2001*), Advanced Calculus, Principles of Analysis (*spring 2005, spring 2007, fall 2010, spring 2016, fall 2018, spring 2021, fall 2021, fall 2022, spring 2023*).
- **Graduate courses:** Methods and Applications of Partial Differential Equations (*fall 2005*), Real Variables (*spring 2004, fall 2004, fall 2011, spring 2012, fall 2023*), Introduction to Classical Analysis (*fall 2021, fall 2022, fall 2023*), Combinatorics (*fall 2014*), Stochastic Processes (*spring 2004*), Free Probability (*fall 2012*), Random Matrices (*spring 2017, spring 2018*).
- Department of Mathematics outstanding teaching award, 2011.

SERVICE:

- Chair/co-chair of the Teaching committee (2021–2023), member of the Academic Professional Track committee (2020–2021), Promotion and Tenure subcommittee (2019–2021), Undergraduate committee (2011–2019), Honors committee (2013–2019), Executive committee (2014–2016).
- Member of the College of Science Tenure and Promotion Advisory Committee, 2021–2022; of College of Arts and Sciences DAC-TT, 2022–2023.
- Director of Undergraduate Research in Mathematics (2012–2019), Undergraduate honors advisor (2012–2021).
- Member of the editorial board of the Advances in Applied Mathematics (2014–).

- Reviewer for Mathematical Reviews (43 reviews); referee (91 reports); NSERC, Simons foundation, NCN (Poland) grant proposal reviewer.
- Department of Mathematics outstanding service award, 2017.

OUTREACH:

- Activities with the Brazos Valley Math Teachers' Circle, and middle school students participating in the Texas A&M SEE-Math, summer 2010; with the TAMU Math Circle, spring 2012, spring 2013, fall 2014; with the Math Fair, spring 2016.
- Presentations to the MCTP and REU students at Texas A&M, summer 2010, summer 2012.
- Grading the power team problems for the High School Math Contest, fall 2015–2016, 2018–2021.
- Help with running the math table at Aggieland Saturday, spring 2016.

MENTORING:

- Undergraduate research project supervisor (spring 2006, spring 2012, summer 2016, spring 2018, summer 2019, spring 2021, summer 2021, fall 2021, spring 2022).
- Chair of a Ph.D. committee (1 present, 2 past), chair of a M.S. committee (1 present, 2 past), member of a committee (3 present, 11 past).

OLDER PUBLICATIONS:

- QUANTUM FREE YANG-MILLS ON THE PLANE (with Ambar N. Sengupta), *Journal of Geometry and Physics* **62** (2012) 330–343.
- SEMIGROUPS OF DISTRIBUTIONS WITH LINEAR JACOBI PARAMETERS (with Wojciech Młotkowski), *Journal of Theoretical Probability* **25** (2012) 1173–1206.
- TWO-STATE FREE BROWNIAN MOTIONS, *Journal of Functional Analysis* **260** (2011) 541–565.
- BOCHNER-PEARSON-TYPE CHARACTERIZATION OF THE FREE MEIXNER CLASS, *Advances in Applied Mathematics* **46** (2011) 25–45 (special issue in honor of Dennis Stanton).
- FREE INFINITE DIVISIBILITY FOR q -GAUSSIANS (with Serban Teodor Belinschi, Marek Bożejko, and Franz Lehner), *Mathematical Research Letters* **17** (2010) 905–916.
- PRODUCT-TYPE NON-COMMUTATIVE POLYNOMIAL STATES, *Noncommutative Harmonic Analysis with Applications to Probability II*, Banach Center Publications, vol. 89, Polish Acad. Sci. Inst. Math., Warsaw, 2010, pp. 45–59.
- FREE EVOLUTION ON ALGEBRAS WITH TWO STATES, *Journal für die reine und angewandte Mathematik* **638** (2010) 75–101.
- APPELL POLYNOMIALS AND THEIR RELATIVES III. CONDITIONALLY FREE THEORY, *Illinois Journal of Mathematics* **53** (2009) 39–66.
- APPELL POLYNOMIALS AND THEIR RELATIVES II. BOOLEAN THEORY, *Indiana University Mathematics Journal* **58** (2009) 929–968.
- MONIC NON-COMMUTATIVE ORTHOGONAL POLYNOMIALS, *Proceedings of the American Mathematical Society* **136** (2008) 2395–2405.
- ORTHOGONAL POLYNOMIALS WITH A RESOLVENT-TYPE GENERATING FUNCTION, *Transactions of the American Mathematical Society* **360** (2008) 4125–4143.

- FREE MEIXNER STATES,
Communications in Mathematical Physics **276** (2007) 863–899.
- ZIMMERMANN TYPE CANCELLATION IN THE FREE FAÀ DI BRUNO ALGEBRA (with Edward G. Effros and Mihai Popa), *Journal of Functional Analysis* **237** (2006) 76–104.
- LINEARIZATION COEFFICIENTS FOR ORTHOGONAL POLYNOMIALS USING STOCHASTIC PROCESSES, *Annals of Probability* **33** (2005) 114–136.
- q -LÉVY PROCESSES,
Journal für die reine und angewandte Mathematik **576** (2004) 181–207.
- APPELL POLYNOMIALS AND THEIR RELATIVES,
International Mathematics Research Notices **2004** (65) 3469–3531.
- FREE MARTINGALE POLYNOMIALS,
Journal of Functional Analysis **201** (2003) 228–261.
- ITÔ FORMULA FOR FREE STOCHASTIC INTEGRALS,
Journal of Functional Analysis **188** (2002) 292–315.
- FREE STOCHASTIC MEASURES VIA NONCROSSING PARTITIONS II,
Pacific Journal of Mathematics **207** (2002) 13–30.
- PARTITION-DEPENDENT STOCHASTIC MEASURES AND q -DEFORMED CUMULANTS,
Documenta Mathematica. **6** (2001) 343–384.
- FREE STOCHASTIC MEASURES VIA NONCROSSING PARTITIONS,
Advances in Mathematics **155** (2000) 154–179.
- THE LINEARIZATION OF THE CENTRAL LIMIT OPERATOR IN FREE PROBABILITY THEORY, *Probability Theory and Related Fields* **115** (1999) 401–416.

LONG TERM VISITS:

- KTH (ROYAL INSTITUTE OF TECHNOLOGY). May 2011.
- ERWIN SCHRÖDINGER INSTITUTE. *Bialgebras in Free Probability*. Spring 2011.
- INSTITUT HENRI POINCARÉ, CENTRE EMILE BOREL. *Free Probability and Operator Spaces*. Fall 1999.

SEMINAR TALKS:

- 2016** – Tulane University, *Colloquium*.
UC San Diego, *Probability Seminar*.
- 2015** CIMAT, *Probability Seminar*.
Georgia Tech, *Stochastics Seminar*.
- 2012** University of Houston, *Analysis Seminar*.
Saarland University, *Functional Analysis Seminar* and *Free Probability Seminar*.
Université Paris Diderot - Paris 7, *Enumerative and Analytic Combinatorics Seminar*.
Université Paris-Est Marne-la-Vallée, *Combinatorics Seminar*.
- 2011** University of Texas, San Antonio, *Colloquium*.
University of Wrocław, Poland, *Non-commutative/Discrete Harmonic Analysis Seminar*.
Université Paul Sabatier, France, *Random Matrices Seminar*.
- 2010** Massachusetts Institute of Technology, *Probability Seminar*.
Louisiana State University, *Probability Seminar*.
Rice University, *Geometry-Analysis Seminar*.

- 2009** University of Saskatchewan, Canada, *Colloquium*.
University of California, Berkeley, *Probabilistic Operator Algebra Seminar*.
- 2008** Ben Gurion University of the Negev, Israel, *Colloquium*.
- 2007** University of Waterloo, Canada, *Analysis Seminar*.
- 2005** Georgia Institute of Technology, *Colloquium*.
University of Central Florida, *Colloquium*.
University of Texas at Austin, *Colloquium*.
Texas A&M University, *Colloquium*.
Oklahoma State University, *Colloquium*.
University of Houston, *Colloquium*.
Lehigh University, *Colloquium* and *Teaching Presentation*.
- 2004** California Institute of Technology, *Analysis seminar*.
Queen's University, Canada, *Seminar on Functional Analysis and Random Matrices*.
University of Cincinnati, *Probability Seminar*.
Pennsylvania State University, *Geometric Functional Analysis Seminar*.
University of Pennsylvania, *Combinatorics Seminar*.
University of Connecticut, *Analysis and Probability Seminar*.
- 2003** University of California, Los Angeles, *Functional Analysis Seminar*.
Texas A&M University, *Linear Analysis and Algebra and Combinatorics Seminar*.
University of Illinois, Urbana-Champaign, *Analysis Seminar*.
University of California, San Diego, *Probability Seminar*.
Massachusetts Institute of Technology, *Combinatorics Seminar*.
University of Pennsylvania, *Analysis Seminar*.
Boston University, *Probability Seminar*.
- 2002** University of California, Berkeley, *Probabilistic Operator Algebras Seminar*.
University of California, Riverside, *Colloquium*.
- 2001** University of California, Davis, *Analysis / Mathematical Physics Seminar*.
- 1999** Goethe-Universität, Germany, *Mathematical Physics Seminar*.

Various seminars, UC Berkeley (1995–2002), UC Riverside (2002–2005), TAMU (2005–).

INVITED CONFERENCE TALKS:

- 2023** – *Joint Spectra and related Topics in Complex Dynamics and Representation Theory* (invited participant), BIRS, Banff, Canada, May.
- 2022** – *AMS Special Session on Quantum Probability, Orthogonal Polynomials, and Special Functions*, Tufts University (remote), March.
- 2021** – *Cumulants in Stochastic Analysis*, Berlin, Germany (remote), February.
- 2020** – *Free Probability*, Saarbrücken, Germany (cancelled).
– *AMS Special Session on C^* -Algebras, Dynamical Systems and Applications*, Denver, January.
- 2019** – *Applications to Random Matrices and Free Probability of Free Noncommutative Functions*, Fields Institute, Toronto, Canada, June.
– *Free Probability: the theory, its extensions*, CRM, Montreal, Canada, March.
– *AMS Special Session on Orthogonal Polynomials, Quantum Probability, Harmonic and Stochastic Analysis*, Baltimore, January.

- 2017** – *Satellite Conference on Operator Algebras (MCA2017)*, Fields Institute, Toronto, Canada, August.
- 2016** – *Analytic versus Combinatorial in Free Probability*, BIRS, Banff, Canada, December.
 – *Workshop on Non-commutative Probability*, Banach center, Będlewo, Poland, July.
 – *Workshop on Noncommutative Analysis*, University of Iowa, June.
 – *Free Probability and Large N Limit, V*, UC Berkeley, March.
- 2015** – *Free Probability Theory*, Oberwolfach, Germany, June.
 – *AMS special session on Noncommutative Function Theory*, San Antonio, January.
- 2014** – *Free Probability and Random Matrices*, Bielefeld University, Germany, September.
 – *Free Probability and Large N Limit, IV*, UC Berkeley, March.
- 2013** – *Special session on Free Probability at the Mathematical Congress of the Americas*, Guanajuato, Mexico, August.
 – *AMS special session on q-series in Mathematical Physics and Combinatorics*, San Diego, January.
- 2012** – *Canadian Operator Symposium*, Queen's University, Canada, May.
- 2011** – *West Coast Operator Algebra Seminar*, University of New Mexico, October.
 – *Bialgebras in Free Probability*, Erwin Schrödinger Institute, Vienna, Austria, February and April.
- 2010** – *Free Probability and Large N Limit, II*, UCLA, Los Angeles, February.
- 2009** – *CMS special session on Operator Algebras*, Windsor, Canada, December.
 – *Workshop on Orthogonal Polynomials, Hankel and Jacobi matrices*, University of Copenhagen, Denmark, August.
 – *Workshop on Non-commutative Harmonic Analysis with Applications to Probability*, Banach center, Będlewo, Poland, August.
- 2008** – *Workshop on Non-commutative Harmonic Analysis with Applications to Probability*, Banach center, Będlewo, Poland, August.
 – *Foundations of Computational Mathematics, Workshop on Special Functions and Orthogonal Polynomials*, City University of Hong Kong, June.
 – *AMS special session on C^* -algebras, subfactors and free probability*, Claremont McKenna College, May.
 – *Free Probability, Extensions, and Applications*, BIRS, Banff, Canada, January.
- 2007** – *Workshop on Noncommutative Dynamics and Applications*, Fields Institute, Canada, July.
 – *Free Probability and Large N Limit*, UC Berkeley, March.
- 2006** – *CMS special session on Probabilistic Methods in Analysis and Algebra*, University of Toronto, Canada, December.
 – *AMS special session on Noncommutative Dynamical Systems*, University of Utah, October.
 – *Workshop on stochastic eigen-analysis and its applications*, MIT, July.
- 2005** – *Free Probability Theory*, Oberwolfach, Germany, March.
- 2004** – *Free Probability Theory*, BIRS, Banff, Canada, October.
 – *Workshop in Linear Analysis and Probability*, Texas A&M University, August.
- 2003** – *Extended Probabilistic Operator Algebra Seminar*, UC Berkeley, August.
 – *Quantum Probability and Infinite Dimensional Analysis*, Greifswald, Germany, June.
 – *AMS special session on Special Functions and q-Series*, Baltimore, January.
- 2002** – *Workshop on Entropy in Operator Algebras*, IPAM, Los Angeles, July.

- *AMS conference on Advances in Quantum Dynamics*, Mount Holyoke College, June.
- *AMS special session on Stochastic Processes and Functional Analysis (in honor of M. M. Rao)*, San Diego, January.
- 2001**
 - *CMS symposium on Free Probability*, York University, Canada, December.
 - *Workshop on Free Probability and Random Matrices*, University of Toronto, Canada, December.
 - *Free Probability and Non-commutative Banach Spaces*, MSRI, Berkeley, January.
- 2000**
 - *AMS special session on Operator Algebras*, San Francisco SU, October.
 - *AMS special session on Subfactors and Free Probability Theory*, UC Santa Barbara, March.
- 1999**
 - *Free Probability and Operator Spaces*, IHP-CEB, Paris, France.
- 1998**
 - *West Coast Operator Algebra Seminar*, CSU San Bernardino, October.
 - *Free Probability and Applications*, CIRM, Lumini, France, January.

LANGUAGES:

- Speak: Russian, French; understand: Spanish.