Tom Alberts

CONTACT INFORMATION

University of Utah
Department of Mathematics
155 S 1400 E Room 233
Salt Lake City, UT 84112

(801) 585-1643
alberts@math.utah.edu
http://www.math.utah.edu/~alberts/

RESEARCH INTERESTS

Probability Theory, Statistical Mechanics – emphasis on Schramm-Loewner Evolution with interests in discrete lattice models, Gaussian Free Field, quantum gravity models, directed polymers and last passage percolation, random walk in random environment.

POSITIONS HELD

University of Utah, Department of Mathematics

2020 - Present: Associate Professor
2013 - 2020: Assistant Professor (on leave 2013-2014)

Caltech, Department of Mathematics

2011 - 2014: Scott Russell Johnson Senior Postdoctoral Fellow

University of Toronto, Department of Mathematics

2008 - 2011: NSERC Postdoctoral Fellow

EDUCATION

Courant Institute of Mathematical Sciences, New York University

2003 - 2008: Ph.D., Mathematics

- Dissertation Topic: Dimension and Measure of SLE on the Boundary
- Advisor: Scott Sheffield

University of Alberta

1998 - 2002: Honours BSc in Mathematics, June 2002

- Statistics Minor

REFEREED PUBLICATIONS

Pole Dynamics and an Integral of Motion for Multiple SLE(0). Alberts T., Byun S.S., Kang N.G., & Makarov N., arXiv: 2011.05714 [math.PR]. (2021). *To appear in Selecta Mathematica.*

The Green's function of the parabolic Anderson model and the continuum directed polymer. Alberts T., Janjigian C., Rassoul-Agha F., Seppalainen T., arXiv: 2208.11255 [math.PR]. (2022).

Dimension Results for the Spectral Measure of the Circular Beta Ensembles. Alberts T. & Normand R., Annals of Applied Probability, **32**, 4642-4680. (2022).

Busemann Functions and Semi-Infinite O'Connell-Yor Polymers. Alberts T., Rassoul-Agha F., Simper M., Bernoulli, **26**, 1927-1955. (2020).

The Geometry of the Last Passage Percolation Problem. Alberts T. & Cator E., ALEA Lat. Am. J. Probab. Math. Stat., **18**, 211-247. (2019).

Bak-Sneppen Backwards. Alberts T., Lee G.-Y. & Simper M., Stochastics, doi: 10.1080/17442508.2017.1282957 (2017).

Nested Critical Points for a Directed Polymer on a Disordered Diamond Lattice. Alberts T., Clark J., Journal of Theoretical Probability, 10.1007/s10959-017-0787-8 (2017).

The Intermediate Disorder Regime for a Directed Polymer Model on a Hierarchical Lattice. Alberts T., Clark J. & Kocic S., Stochastic Process. Appl., **127**, no. 10, 3291-3330 (2017).

A Dimension Spectrum for SLE Boundary Collisions. Alberts T., Binder I. & Johansson Viklund F., Comm. Math. Phys., **343**, no. 1, 273-298 (2016).

Diffusions of Multiplicative Cascades. Alberts T. & Rifkind B., Stochastic Process. Appl., **124**, 1141-1169 (2014).

Intermediate Disorder Regime for 1+1 Dimensional Directed Polymers. Alberts T., Khanin K. & Quastel J., Annals of Probability, **42**, no. 3, 1212-1256 (2014).

The Continuum Directed Random Polymer. Alberts T., Khanin K. & Quastel J., Jour. Stat. Phys., **154**, 305-326 (2014).

Some Partial Results on the Convergence of Loop-Erased Random Walk to SLE(2) in the Natural Parameterization. Alberts T., Kozdron M. & Masson R., Jour. Stat. Phys., **153**, 119-141 (2013).

The Near-Critical Scaling Window for Directed Polymers on Disordered Trees. Alberts T., Ortgiese M., Electron. J. Prob., **18**, no. 19, 1-24. (2013).

The Green's Function for the Radial Schramm-Loewner Evolution. Alberts T., Kozdron M. & Lawler G., J. Phys. A: Math. Theor., **45**, 494015 (2012).

The Covariant Measure of SLE on the Boundary. Alberts T. & Sheffield S., Prob. Theor. Rel. Fields, **3-4**, 331-371 (2011).

The Intermediate Disorder Regime for Directed Polymers in Dimension 1+1. Alberts T., Khanin K. & Quastel J., Phys. Rev. Lett., **105**, 090603 (2010).

Bridge Decomposition of Restriction Measures. Alberts T. & Duminil-Copin H., Jour. Stat. Phys., **140**, **3**, 467-493 (2010).

Hausdorff Dimension of the SLE Curve Intersected with the Real Line. Alberts T. & Sheffield S., Electron. J. Prob., **40**, 1166-1188. (2008).

Intersection Probabilities for a Chordal SLE Path and a Semicircle. Alberts T. & Kozdron M., Electron. Comm. Prob., **13**, 448-460. (2008).

A Locally Adaptive Transformation Method of Boundary Correction in Kernel Density Estimation. Karunamuni R.J. & Alberts T., Journal of Statistical Planning and Inference, **136**, 2936-2960. (2006).

A Generalized Reflection Method of Boundary Correction in Kernel Density Estimation. Karunamuni R.J. & Alberts T., Canadian Journal of Statistics, **33**, 497-509. (2005).

On Boundary Correction in Kernel Density Estimation. Karunamuni R.J. & Alberts

T., Statistical Methodology, **2**, 191-212. (2005).

A Semiparametric Method of Boundary Correction for Kernel Density Estimation. Alberts T. & Karunamuni R.J., Statistics and Probability Letters, **61**, 287-298. (2003).

Publications in Progress

Conformal Field Theory for Multiple SLE. Alberts T., Kang N.-G., & Makarov N., in preparation.

A Primer on the Kang-Makarov Conformal Field Theory: with a focus on applications to the Schramm-Loewner Evolution. Alberts T., in preparation.

Random Matrices and the Bergmann-Milton Representation for Random Resistor Networks. Alberts T., Cherkaev E., Golden K., Le H., and Murphy N.B., in preparation.

Gaussian Analysis. Alberts T., Khoshnevisan D., graduate level book, in preparation.

Book Chapters

An Automated Algorithm for Decline Analysis. Aggarwala R., Alberts T., Bose C. et al., Proceedings of the Fifth PIMS Industrial Problem Solving Workshop. (2001).

Invited Talks

Random Geometry and CFT, Aspects of Physical Mathematics Seminar, University of Alberta, Edmonton, Canada (Feb 2024).

The Fundamental Solution for the 1+1-Dimensional Stochastic Heat Equation, **Invited Speaker**, 2023 SAARC ColLabor Workshop, Busan, South Korea (June 2023).

Conformal Field Theory for Multiple SLEs, Conference on Random Geometry and Related Fields, Jeju Island, South Korea (June 2023).

Loewner Dynamics for the Multiple SLE(0) Process, CRM-ISM Montreal Probability Seminar, Montreal, Canada (Apr 2023).

Random Geometry in the Spectral Measure of the Circular Beta Ensemble, KIAS Analysis Seminar, online (Dec 2022).

Random Matrix Theory for Homogenization of Composites, 7th Annual SIAM Central States Section, Stillwater, OK (Oct 2022).

A Gentle Introduction to Kang-Makarov Conformal Field Theory, MSRI Analysis and Geometry of Random Spaces Seminar Series, Berkeley, CA (May 2022).

Loewner Dynamics for Real Rational Functions and the Multiple SLE(0) Process, MSRI Workshop on Analysis and Geometry of Random Spaces, Berkeley, CA (January 2022).

A Fixed Point Formula of a Random Dynamical System. Korean Institute for Advanced Studies Analysis Seminar, online (October 2021).

Uniform Spanning Trees and the Burton-Pemantle Theorem. Korean Institute for Advanced Studies Analysis Seminar, online (October 2021).

Random Matrix Theory for Composites on Graphs. Korean Institute for Advanced Studies Analysis Seminar, online (October 2021).

Loewner Dynamics for the Multiple SLE(0) Process. Simons Center for Geometry

and Physics program on Probability, Integrability, and Conformal Invariance, online (August 2021).

Loewner Dynamics for the Multiple SLE(0) Process. World Congress of Probability and Statistics, online (July 2021).

Loewner Dynamics for the Multiple SLE(0) Process. Probability Seminar, MIT, online (March 2021).

Loewner Dynamics for the Multiple SLE(0) Process. Probability Seminar, Purdue University, online (February 2021).

Loewner Dynamics for the Multiple SLE(0) Process. Joint Mathematical Physics/Probability Seminar, University of Arizona and University of Utah, online (January 2021).

Conformal Field Theory for Multiple SLEs. Invited Session, World Congress of Probability and Statistics, Seoul, South Korea (August 2020).

Conformal Field Theory for Multiple SLEs. Probability Seminar, Postech, Pohang, South Korea (Oct 2019).

Conformal Field Theory for Multiple SLEs. Probability Seminar, KIAS, Seoul, South Korea (Oct 2019).

Random Matrix Theory for Homogenization of Composites. Applied Math Seminar, University of Utah (Sept 2019).

Conformal Field Theory for Multiple SLEs. Probability Seminar, University of Utah (Sept 2019).

Macro and Microscopic Limits of Directed Polymer Models. Probability Seminar, KAIST, Daejeon, South Korea (May 2019).

Macro and Microscopic Limits of Directed Polymer Models. Probability, Analysis, and PDE Seminar, Korean Institute of Advanced Study, Seoul (May 2019).

The Geometry of the Last Passage Percolation Problem. Probability Seminar, Temple University (May 2019).

Summer Course on Random Resistor Networks. University of Utah (May 2018)

Multifractality of Multiplicative Cascades, a Diffusive Point of View. Conference on Random Trees: Structure, Self-Similarity, and Dynamics. CIMAT, Guanajuato, Mexico (April 2018).

The Geometry of the Last Passage Percolation Problem. Probability Seminar, UCSD (December 2017).

RWRE in the KPZ Universality Class. Random Walks in Random Environment Workshop, CIRM, Marseille, France (May 2017).

The Geometry of the Last Passage Percolation Problem. Conference on KPZ Universality and Directed Polymers, CIRM, Marseille, France (April 2017).

The Geometry of the Last Passage Percolation Problem. Probability Seminar, University of Toronto (March 2017).

The Geometry of the Last Passage Percolation Problem. Data Science Seminar, University of Utah (November 2016).

The Geometry of the Last Passage Percolation Problem. Algebraic Geometry Seminar, University of Utah (October 2016).

Airy Processes and Variational Formulas, Part II. Stochastics Seminar, University of Utah (September 2016).

Airy Processes and Variational Formulas, Part I. Stochastics Seminar, University of Utah (September 2016).

Random Geometry in the Spectral Measure of the Circular Beta Ensemble. Probability Seminar, UC San Diego (April 2016).

Ideas from KPZ in Directed Polymer Models. AMS Central Sectional Meeting, North Dakota State University (April 2016).

Random Geometry in the Spectral Measure of the Circular Beta Ensemble. Invited Speaker, SouthEast Analysis Meeting, University of South Florida (March 2016).

Random Geometry in the Spectral Measure of the Circular Beta Ensemble. Analysis Seminar, Baylor University, (November 2015).

Boundary Measures and Natural Time Parameterization for SLE. Geometry of Random Walks and SLE, Isaac Newton Institute, (June 2015).

A Dimension Spectrum for SLE Boundary Collisions. AMS Eastern Sectional Meeting, Michigan State University (April 2015).

Random Geometry in the Spectral Measure of the Circular Beta Ensemble. Analysis and Dynamics Seminar, University of Mississippi, (March 2015).

Random Geometry in the Spectral Measure of the Circular Beta Ensemble. Probability Seminar, University of Toronto, (March 2015).

Correlated Statistics in the Last Passage Percolation Model. Science Night Live, University of Utah, (October 2014).

Random Geometry in the Spectral Measure of the Circular Beta Ensemble. Probability Seminar, University of Utah (October 2014).

Random Geometry in the Spectral Measure of the Circular Beta Ensemble. ICM Satellite Conference on Random Geometry, Seoul, South Korea (August 2014).

SLE, GFF, and CFT. Probability Seminar, UC Irvine (April 2014).

Scaling Limits of Directed Polymer Models. Western States Mathematical Physics Meeting, Caltech (February 2014).

SLE, GFF, and CFT. New Zealand Probability Workshop, Te Anau, NZ (January

2014).

SLE, GFF, and CFT. Probability Seminar, UCLA (November 2013).

SLE, GFF, and CFT. Probability Seminar, USC (November 2013).

SLE, GFF, and CFT. Probability Seminar, CalState Northridge (November 2013).

The Dimension Spectrum of SLE Boundary Collisions. New Directions in Probability, ISI Bangalore, India (June 2013).

The Dimension Spectrum of SLE Boundary Collisions. Workshop on Conformal Invariance in Continuous and Discrete Systems, Simons Center for Geometry and Physics (April 2013).

Diffusions of Multiplicative Casdcades. Colloquium, Carnegie Mellon University (January 2013).

Polymers in Probability: Bridges, Brownian Motion, and Disorder on an Intermediate Scale. Colloquium, Georgia Institute of Technology (December 2012).

The Dimension Spectrum of SLE Boundary Collisions. Probability Seminar, University of Utah (December 2012).

Diffusions of Multiplicative Cascades. Special Colloquium, University of Utah (December 2012).

The Dimension Spectrum of SLE Boundary Collisions. Mathematical Physics Seminar, Caltech (November 2012).

Scaling Limits of Directed Polyer Models. Scaling Limits in Statistical Mechanics, Oberwolfach (Sept 2012).

Diffusions of Multiplicative Cascades. Probability Seminar, UCSD (June 2012).

The Continuum Directed Random Polymer and the Intermediate Disorder Regime in Dimension 1+1. Workshop on Random Polymer Models and Related Problems, Institute of Mathematical Sciences, Singapore (May 2012).

Diffusions of Multiplicative Cascades. Probability Seminar, Columbia University (April 2012).

Diffusions of Multiplicative Cascades. Probability Seminar, University of Colorado at Boulder (April 2012).

Diffusions of Multiplicative Cascades. Western States Mathematical Physics Meeting (February 2012).

The Continuum Directed Polymer and the KPZ Universality Class. Southern California Probability Symposium (December 2011).

Intermediate Disorder for Polymers on Trees. Probability Seminar, UCLA (October 2011).

Intermediate Disorder for Polymers on Trees. Mathematical Physics Seminar, Caltech (October 2011).

Intermediate Disorder for Polymers on Trees. Stochastics Seminar, Technical University of Budapest (May 2011).

Polymers in Probability: Bridges, Brownian Motion, and Disorder on an Intermediate Scale. Colloquium, Queens University (March 2011).

Intermediate Disorder for Directed Polymers in Dimension $1{+}1$. Analysis Seminar, Caltech (March 2011).

Polymers in Probability: Bridges, Brownian Motion, and Disorder on an Intermediate Scale. Colloquium, Northwestern University (January 2011).

Polymers in Probability: Bridges, Brownian Motion, and Disorder on an Intermediate Scale. Colloquium, Purdue University (December 2010).

Intermediate Disorder for Directed Polymers in Dimension $1{+}1$. Probability Seminar, Courant Institute (November 2010).

Convergence of Loop-Erased Random Walk to SLE(2) in the Natural Time Parameterization. Probability Seminar, University of Chicago (October 2010).

Intermediate Disorder for Directed Polymers in Dimension $1{+}1$. Probability Seminar, University of Wisconsin-Madison (October 2010).

Intermediate Disorder for Directed Polymers in Dimension $1{+}1$. Probability Seminar, University of Utah (September 2010).

Bridge Decomposition of Restriction Measures. Probability Seminar, IMPA. (August 2010).

Intermediate Disorder for Directed Polymers in Dimension $1{+}1$. 2010 PIMS Summer School. (June 2010).

Bridge Decomposition of Restriction Measures. Probability Seminar, University of British Columbia. (January 2010).

Random Measures in 2-D Conformally Invariant Systems. 7th World Congress in Probability and Statistics. (July 2009).

Random Measures in 2-D Conformally Invariant Systems. 5th Cornell Probability Summer School. (July 2009).

Bridge Decomposition of Restriction Measures. Probability Seminar, University of Toronto. (January 2009).

Bridge Decomposition of Restriction Measures. Probability Seminar, Cornell University. (November 2008).

Dimension and Measure of SLE on the Boundary. Probability Seminar, University of Toronto. (September 2008).

Bridge Decomposition of Restriction Measures. Workshop on SLE and Scaling Limits, CRM, Montreal. (August 2008).

Dimension and Measure of SLE on the Boundary. 7th World Congress in Probability and Statistics, Session on SLE. (July 2008).

Dimension and Measure of SLE on the Boundary. Probability Seminar, Courant Institute. (March 2008).

Dimension and Measure of SLE on the Boundary. Stochastics Seminar, University of Utah. (February 2008).

An Introduction to the Schramm-Loewner Evolution. Workshop on Random Media, Pontificia Católica Universidad de Chile. (January 2008).

Boundary Correction Methods in Kernel Density Estimation. New Jersey Institute of Technology Statistics Colloquium. (November 2007).

Asymptotics for Two-Point SLE Hitting Probabilities on the Real Line. Park City Mathematics Institute. (July 2007).

Visiting Positions

Spring 2022 — Research Professor - Mathematical Sciences Research Insitute, Berkeley, CA

Participation In Workshops and Summer Schools

Random Conformal Geometry and Related Fields, KIAS, South Korea (June 2023)

MSRI program on Analysis and Geometry of Random Spaces (Jan - May 2022)

Frontier Probability Days, Las Vegas, NV (Dec 2021)

Stochastic Processes and their Applications 2019, Northwestern University (July 2019)

Seminar on Stochastic Processes, University of Utah (March 2019)

Random Conformal Geometry and Related Fields, KIAS, South Korea (June 2018)

Random Trees: Structure, Self-Similarity, and Dynamics (April 2018)

Frontier Probability Days, Corvallis, OR (March 2018)

Semester on KPZ Universality and Directed Polymers, CIRM, Marseille, France (April - June 2017).

SouthEast Analysis Meeting, University of South Florida (March 2016).

Kavli Institute Program on KPZ Integrability and Universality, Santa Barbara (February 2016).

Isaac Newton Institute Program on Random Geometry, Cambridge, UK (June 2015).

ICM Satellite Conference on Random Geometry, Seoul, South Korea (August 2014).

Frontier Probability Days, Tuscon, AZ (May 2014).

New Zealand Probability Workshop, Te Anau, NZ (January 2014).

Workshop on New Directions in Probability, ISI Bangalore, India (June 2013).

Workshop on Renormalization Group Methods for Polymer and Last Passage Percolation Problems, BIRS, Banff (July 2012)

Workshop on Random Polymer Models and Related Problems, IMS, Singapore (May 2012)

Workshop on the KPZ Universality Class, AIM, Palo Alto (October 2011)

Workshop on Interacting Processes in Random Environments, Fields Institute, Toronto (February 2011)

Clay Mathematics Institute Summer School on Probability and Statistical Physics in Two (and More) Dimensions (July 2010)

Tutorial Leader for *Quantum Gravity, KPZ, and Random Conformal Weldings* at the 2010 PIMS Summer School in Probability (June 2010)

33rd Conference on Stochastic Processes and their Applications, Berlin (July 2009)

5th Cornell Probability Summer School, Cornell University, Ithaca (July 2009)

Workshop on Interacting Particle Systems, CRM, Montreal (May 2009)

Workshop on New Directions in Random Spatial Processes, CRM, Montreal (May 2009)

Workshop on Stochastic Loewner Evolution and Scaling Limits, CRM, Montreal (August 2008)

7th World Congress in Probability and Statistics, Singapore (July 2008)

3rd La Pietra Week in Probability, Florence, Italy (June 2008)

School on Conformally Invariant Models, IMPA, Brazil (April 2008)

Workshop on Random Walks, Particle Systems, and Random Media, Pontificia Universidad Católica de Chile (January 2008)

Seminar on Conformal Invariance in Mathematical Physics, Mathematisches Forschungsinstitut Oberwolfach (November 2007)

Graduate Summer School in Statistical Mechanics, Park City Mathematics Institute (July 2007)

Teaching Assistant for Undergraduate Summer School in Statistical Mechanics course *Intro to Brownian Motion and its Applications*, Park City Mathematics Institute (July 2007)

CNA Summer School: Probabilistic and Analytical Perspectives on Contemporary PDEs, Carnegie Mellon University (June 2006)

Mini-Course on Stochastic PDEs, University of Utah (May 2006)

4th PIMS Graduate Math Modelling Camp, University of Victoria (June 2001)

5th PIMS Industrial Problem Solving Workshop, University of Washington at Seattle (June 2001)

Organizational Duties

Organizer, *Random Conformal Geometry and Related Fields in Jeju*, KIAS (June 2023).
Organizer, *Frontier Probability Days*, University of Nevada Las Vegas (Dec 2021).
Organizer, *AMS Western Sectional Meeting*, University of Utah (October 2020+).
Organizer, *Analysis and Geometry of Random Spaces*, KIAS (August 2020+).
Organizer, *Seminar on Stochastic Processes 2019*, University of Utah (March 2019).
Organizer, *Random Conformal Geometry and Related Fields*, KIAS (June 2018).
Organizer, *Frontier Probability Days*, Oregon State University (March 2018).
Organizer, *Random Walks in Random Environment*, CIRM (May 2017).
Organizer, *KPZ Universality and Directed Polymers*, CIRM (April 2017).
Organizer, *Frontier Probability Days*, University of Utah (May 2016).
Organizer, *AMS Western Sectional Special Session*, University of Utah (April 2016).
Organizer, *Utah Probability Seminar*. (September 2014 – Present).
Organizer, *Frontier Probability Days*, University of Arizona (May 2014).
Organizer, *Caltech Analysis Seminar*. (September 2011 – May 2014).
Organizer, *Renormalization Group Methods for Polymer Problems*, BIRS (July 2012).
Organizer, *Interacting Processes in Random Environments*, Fields Institute (Feb 2011).
Organizer, *Toronto Probability Seminar*. (January 2009 – June 2011).
Organizer, *Toronto Probability Study Group*. (September 2008 – June 2011).
Organizer, *University of Toronto Graduate Student/Postdoc Probability Study Series*. (January 2010 – June 2011).

Teaching Experience

	Spring 2024	Mathematical Probability II (Graduate)
	Fall 2023	Applied Linear Operators/Spectral Methods (PhD/Masters/Undergrad)
	Fall 2023	Honors Complex Variables (Undergrad)
	Spring 2023	Multilinear Models (PhD/Masters/Undergrad)
	Fall 2022	Applied Linear Operators/Spectral Methods (PhD/Masters/Undergrad)
	Fall 2022	Honors Complex Variables (Undergrad)
	Spring 2021	Instructor, Statistical Inference I (PhD/Masters/Undergrad)
	Fall 2020	Instructor, Statistical Inference I (PhD/Masters/Undergrad)
	Spring 2020	Instructor, Planar Statistical Mechanics (PhD/Masters)
	Spring 2020	Instructor, Multilinear Models (PhD/Masters/Undergrad)
	Fall 2019	Instructor, Mathematical Probability (Graduate)
	Spring 2019	Instructor, Statistical Inference II (PhD/Masters/Undergrad)
	Spring 2019	Instructor, Time Series Analysis (PhD/Masters/Undergrad)
	Fall 2018	Instructor, Statistical Inference I (PhD/Masters/Undergrad)
	Spring 2018	Instructor, Time Series Analysis (PhD/Masters/Undergrad)
	Spring 2018	Instructor, Multilinear Models (PhD/Masters/Undergrad)
	Fall 2017	Instructor, Linear Models I (PhD/Masters/Undergrad)
	Fall 2016	Instructor, Statistical Inference I (PhD/Masters/Undergrad)
	Fall 2016	Instructor, Algebraic Combinatorics REU Class (Undergraduate)
	Fall 2015	Instructor, Applied Statistics I (Undergraduate)
	Fall 2015	Instructor, Statistical Inference I (PhD/Masters/Undergrad)
	Spring 2015	Instructor, Actuarial Mathematics (Undergraduate)
	Fall 2014	Instructor, Introduction to Probability Models (Masters/Undergrad)
	Spring 2014	Instructor, Representation Theory (Graduate)
	Fall 2013	Instructor, Probability I (Graduate)
	Spring 2013	Instructor, Statistics (Graduate)
	Fall 2012	Instructor, Stochastic Analysis (Graduate)
	Spring 2012	Instructor, Probability II (Graduate)
	Fall 2011	Instructor, Probability I (Graduate)
	Spring 2011	Instructor, Stochastic Processes (Undergraduate)
	Fall 2010	Instructor, Partial Differential Equations (Undergraduate)
Graduate Student Reading Groups	Fall 2023	Probabilistic Models Reading Group
	Fall 2019	High-Dimensional Probability
	Spring 2018	Stochastic Integration
	Spring 2017	Random Matrices
	Fall 2015	Asymptotics of Longest Increasing Subsequences
	Fall 2014	Random Matrices

Graduate Students - Masters of Statistics	Jan 2023 –	Thomas Yassmin. **Project:** In progress
	Jan 2021 - Apr 2022	Annie Fuller. **Project:** Gaussian Determinantal Point Processes: An Alternative Estimation Method for Dimension Reduction
	Jul 2020 - Dec 2021	Corrin Krogh. **Project:** Random Forest Based Contact Center Prediction Model
	Jul 2019 - Dec 2021	Hilary Hickingbotham. **Project:** Spectra Derivation, PCA Analysis, Survival Analysis, and Bootstrapping Validation on TCGA-KIRC Data
	Jul 2020 - Dec 2020	Sterling Blood. **Project:** Class Imbalance Problems in Tree-Based Methods
	Sep 2019 - Dec 2020	Conor Tillinghast. **Project:** Probabilistic Neural Kernel Tensor Decomposition
	Sep 2019 - Apr 2020	Miranda Buckner. **Project:** A Classification Analysis of Diabetes Patient Data
	Jul 2019 - Dec 2020	Josh Tracy. **Project:** Bayesian Models of Baseball Performance
	Jul 2019 - Jul 2020	Kelly MacArthur. **Project:** Random Forest Analysis of Undergrad Course Evaluations
	Aug 2018 - Dec 2019	Sergazy Nurbavliyev. **Project:** Neural Network Analysis of Grad Student Application Data
	Jul 2019 - Jan 2020	Loren Santana. **Project:** Analyzing System Structure using Bayesian Networks
	Aug 2017 - Aug 2019	Huy Dinh. **Project:** Hurst Exponent Estimation for Sea Ice Floes
	Jan 2018 - May 2019	Elena Nazarenko. **Project:** OLCC Marijuana Market and Customer Characteristics in Oregon
	Aug 2018 - May 2019	Chanel Roe. **Project:** Predicting Conspiracy Theorists
	Aug 2018 - May 2019	Bryan Cook. **Project:** Random Forest Analysis of University Mathematics Graduate Application Data
	Aug 2017 - Dec 2018	Ash Rowland. **Project:** Change Detection in a Functional Time Series
	Aug 2017 - May 2018	Lu Tian. **Project:** Predictive Models for Survival Time of Patients in Colorectal Cancer
	Sep 2015 - Jul 2016	Lisa Valentine. **Project:** Spatial-temporal Analysis of Pollution Data.
Graduate Students - Masters of Math	Sep 2020 – Apr 2021	Jason Hoag. **Project:** Gerrymandering Detection via MCMC
	Jan 2020 – Jun 2020	Joseph Ward. (Exam option)
Graduate Students - PhD	Jan 2018 – Feb 2022	Yiming Xu (co-supervisor). **Project:** A Bandit-Learning Approach to Multifidelity Approximation
	Jan 2020 – Aug 2021	Loren Santana. **Project:** Effective Resistance on Graphs with Random Geometries
	Jan 2018 – Jul 2020	Sergazy Nurbavliyev (co-supervisor). **Project:** Large Deviations Principle for Markov Random Cascades
	Aug 2015–May 2017	Daniel Lee. **Project:** Singular Value Decomposition of Last Passage Paths (incomplete)

Graduate Student Supervisory Committees

Jan 2020 – Jun 2023	Sean Groathouse (Math PhD).
Jan 2019 – Mar 2021	Ryleigh Moore (Math PhD).
Sep 2020 – Apr 2021	Christina Pick (Math MStat).
Sep 2020 – Apr 2021	Travis Tiner (Math MStat).
Sep 2020 – Dec 2021	Kali Wickens (Math MStat).
Jan 2019 – Oct 2020	Curtis Miller (Math PhD and MStat).
Jan 2018 – Jun 2021	Conor Tillinghast (Math PhD).
Jan 2018 – Sep 2020	Fatemeh Koohestanmahalian (Elec. Eng. PhD).
Jan 2018 – Jun 2020	Sergazy Nurbavliyev (Math PhD).
Jan 2018 – Jul 2020	Huy Dinh (Math PhD).
Jan 2017 – Dec 2019	Erin Linebarger (Math PhD).
Jan 2019 – Jun 2019	Tristan Taylor (Econometric MStat).
Jan 2016 – May 2019	Weicong Su (Math PhD).

Supervised Undergraduate Students

Jan 2024–May 2024	Mitchell Spendlove. **Project:** Uniformization of Riemann Surfaces
Jan 2023–May 2023	Carson Storm. **Project:** Potential Theory on Riemann Surfaces
Aug 2022–Dec 2022	Long Nguyen, Ryan Redd. **Project:** Multilinear Algebra and Mathematical Physics
Oct 2020–Apr 2021	Molly Verhaaren. **Project:** Statistical Analysis of Election Recounts
Jan–Apr 2020	Clayton Allred, Noel McAllister. **Project:** Metropolis-Hastings Algorithm
Jan–May 2019	James Firpo. **Project:** Empirical Distributions of Degenerate Gaussians
May 2018–July 2019	Han Le. **Project:** Spectral Analysis of Random Resistor Networks
Jan–May 2018	Han Le. **Project:** The Baik-Ben Arous-Peche Phase Transition in Sample Covariance Matrices
Jan–May 2017	Weston Barton. **Project:** Enumerating Standard Young Tableaux through the NPS Algorithm.
Jan–May 2017	Jana Klopsch. **Thesis:** Spectral Measures of Percolated Gradient Projection Matrices on Graphs.
Aug 2016–May 2017	Kenneth Zheng. **Honors Thesis:** Dyck Paths and Random Trees.
Aug 2016–May 2017	Justin Tse. **Honors Thesis:** Singular Value Decomposition of Last Passage Paths.
Aug–Dec 2016	Richard Buck. **Project:** Limit Shapes for Signed Involutions.
Jan–Aug 2016	Mackenzie Simper. **Project:** Maximal Cones for the Signed Last Passage Percolation Model.
Aug–Dec 2015	Chong Wang. **Project:** RSK Algorithm.
Aug–Dec 2015	Mackenzie Simper. **Project:** Bak-Sneppen Backwards.
Jan–May 2015	Tianyu Wang. **Project:** Extreme Values of Correlated Gaussians.
Jan–May 2015	Mackenzie Simper. **Project:** Stochastic Heat Equation on Markov Chains.
Summer 2013-14	Bryant Lin. **Project:** Geometry of the Last Passage Percolation Problem.
Summer 2014	Grace Lee. **Project:** Properties of the Bak-Sneppen Model.

Honors and Awards

2019-2023	Taft-Nicholson Summer Fellow Residency
2019	Departmental Faculty Undergraduate Teaching Award
2018	College of Science Award for Fostering Undergraduate Research Excellence
2011–2014	Scott Russell Johnson Senior Postdoctoral Fellowship
2008–2011	NSERC Postdoctoral Fellow
2003–2008	Henry MacCracken Fellowship New York University Graduate School of Arts and Sciences
2002	Univ of Alberta Sunil Keith Jugdutt Scholarship for Excellence in Science
2002	Univ of Alberta Dean's Silver Medal in Science
1999–2001	Univ of Alberta Faculty of Science Continuing Studies Scholarship
2000–2001	Alberta Heritage Fund Louise McKinney Post-Secondary Scholarship
2001	Univ of Alberta Ernst Wilson Sheldon Memorial Prize in Mathematics
1999–2000	Univ of Alberta Murray Thomas Gibson Memorial Prize in Mathematics

Grants and Applications

Jan 2023	Simons Travel Support for Mathematicians Grant on *Markov Functions and Stochastic Loewner Evolutions.* (**Funded $42,000**)
May 2021	NSF RTG Grant on *Optimization and Inversion for the 21st Century Workforce.* **Senior Personnel**. ($2,498,692.00)
Sep 2021	NSF Grant (PI) on *Random Multifractal Measures.* (Denied May 2022).
May 2021	NSF RTG Grant on Optimization and Inversion for the 21st Century Workforce.
Sep 2020	Simons Fellowship in Mathematics. (Denied Dec 2020).
Sep 2020	NSF Grant (PI) on *Random Multifractal Measures.* (Denied Mar 2021).
Oct 2019	NSF Conference Grant for Frontier Probability Days 2020. PI. (**Funded $32,000**).
Dec 2018	NSF Conference Grant for SSP 2019. PI. (**Funded $49,450**).
Jul 2018 – Jun 2021	NSF Grant on *Stochastic Analysis of Random Multifractal Measures.* PI. (**Funded $128,012**).
Jan 2018	NSF Conference Grant for KIAS conference *Random Conformal Geometry and Related Fields.* PI. (**Funded $26,650**).
Jan 2018	NSF Conference Grant for *Frontier Probability Days.* Co-PI. (**Funded $25,000**).
Aug 2017– Aug 2020	NSF Grant (co-PI) on *Random Matrix Theory for Homogenization of Composites.* (**Funded $353,794**).
Jan 2017	NSF Conference Grant for CIRM Program on *KPZ Universality and Directed Polymers.* (**Funded $49,450**).
Mar 2017	NSF Transdisciplinary Research Grant: TRIPODS (SP). (Denied July 2017).
Nov 2016	NSF Grant (PI) on *Random Multifractal Measures.* (Denied July 2017).
Jan 2016	Simons Foundation *Collaboration Grant for Mathematicians.* (**Funded $35,000** – Sept 2016 - Aug 2021).
Nov 2015	NSF Grant on *Convex Geometry and Last Passage Percolation.* (Denied April 2015).
Aug 2015	University of Utah Funding Incentive Seed Grant on *Convex Geometry and Last Passage Percolation.* (**Funded $35,000** – Jan 2016 - Jan 2017).
Nov 2014	NSF Grant on *Crossover Phenomena in Directed Polymer Models.* (Denied March 2015).
Sept 2014	NSF Conference Grant for Newton Institute program on *Random Geometry.* Co-PI. (**Funded $35,000**).
May 2014	NSF Conference Grant for *Frontier Probability Days.* Co-PI. (**Funded $20,000**).
Nov 2013	NSF Grant on *Random Multifractal Measures and their KPZ Scaling Relations.* (Denied July 2014).
Nov 2012	NSF Grant on *Multifractal Analysis of Random Measures in Statistical Mechanics.* (Denied May 2013).

Departmental Committees	2022–2024	Executive Committee
	2022–2024	Chair, Graduate Recruitment Committee
	2020–2023	MStat Program Director
	2019–2022	Undergraduate Statistics Advisor
	2019–2021	Graduate Recruitment Committee
	2018–2019	Undergraduate Curriculum Committee
	2018–2020	Departmental Ambassador to RMMC
	2018–2019	Department Development Committee
	2018–2019	Graduate Recruitment Committee
	2017–2018	Department Development Committee
	2017–2018	Graduate Recruitment Committee
	2016–2017	Graduate Recruitment Committee
	2016–2017	Applied Math Research Committee
	2015–2016	Chair, Graduate Recruitment Committee
	2015–2016	Departmental Colloquium Committee
	2014–2015	Departmental Science Day Committee
University Committees	2021–2023	Endorsed Scholarship Endorsement Committee
	2020–2022	University Statistics Committee Representative
	2016–2017	University Graduate Research Fellowship Committee
Community Outreach and Activities	Jun 2021	Departmental Summer High School Program Instructor
	Apr 2021	Undergraduate Colloquium speaker
	Aug 2020	YouTube presentation timed with VP Debate
	Dec 2019	Science at Breakfast presentation
	Sep 2018 -	Masters of Statistics Student-Community Seminar
	Apr 2017	Science at Breakfast presentation
	Apr 2017	Undergraduate Colloquium speaker
	Apr 2015	GSAS colloquium speaker
	Mar 2015	Undergraduate Colloquium speaker
	Oct 2014	Science Night Live presentation
	Oct 2014-2020	Science Day Presenter