Dapeng Zhan

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Education

Ph.D. in Mathematics, California Institute of Technology, 2004
Advisor: Nikolai Makarov
Disertation: Random Loewner Chains in Riemann Surfaces.

Research Interests

Probability Theory, Complex Analysis, Statistical Mechanics, Schramm-Loewner Evolution (SLE)

Academic Appointments

Professor, Michigan State University, Department of Mathematics, July 2017–present

Associate Professor, Michigan State University, Department of Mathematics, July 2012–June 2017

Assistant Professor, Michigan State University, Department of Mathematics, July 2009–June 2012

Gibbs Assistant Professor, Yale University, Department of Mathematics, July 2007–June 2009

Morrey Assistant Professor, U.C. Berkeley, Department of Mathematics, July 2004–June 2007

Awards and Grants

Simons Fellowship, 2016

Salem Prize, 2012

Alfred P. Sloan Research Fellowship, 2011-2015

NSF CAREER Award (DMS-1056840), 2011 – 2018

NSF Grant (DMS-09063733), 2009 – 2013

Scott Russel Johnson Graduate Dissertation Prize in Mathematics, Caltech, 2004

Publications

1. Stochastic Loewner evolution in doubly connected domains. *Probab. Theory Rel.*, 129(3):340-380, 2004.
2. Some properties of annulus SLE. *Electron. J. Probab.*, 11, Paper no. 41:1069-1093, 2006.
3. The scaling limits of planar LERW in finitely connected domains. *Ann. Probab.*, 36(2):467-529, 2008.
4. Reversibility of chordal SLE. *Ann. Probab.*, 36(4):1472-1494, 2008.
5. Duality of chordal SLE, *Invent. Math.*, 174(2):309-353, 2008.

6. Continuous LERW started from interior points. *Stoch. Proc. Appl.*, 120:1267-1316, 2010.
7. Reversibility of some chordal SLE($\kappa;\rho$) traces. *J. Stat. Phys.*, 139(6):1013-1032, 2010.
8. Duality of chordal SLE, II. *Ann. I. H. Poincare-Pr.*, 46(3):740-759, 2010.
9. Loop-erasure of planar Brownian motion. *Commun. Math. Phys.*, 303(3):709-720, 2011.
10. Restriction properties of annulus SLE. *J. Stat. Phys.*, 146(5):1026-1058, 2012.
11. Reversibility of whole-plane SLE. *Probab. Theory Rel.*, 161(3):561-618, 2015.
12. Ergodicity of the tip of an SLE curve. *Probab. Theory Rel.*, 164(1):333-360, 2016.
13. (with Steffen Rohde) Backward SLE and the symmetry of the welding. *Probab. Theory Rel.*, 164(3-4):815-863, 2016.
14. (with Mohammad A. Rezaei) Higher moments of the natural parameterization for SLE curves. *Ann. I. H. Poincare-Pr.*, 53(1):182-199, 2017.
15. (with Hao Wu) Boundary Arm Exponents for SLE. *Electron. J. Probab.*, 22, Paper no. 89, 26 pp, 2017.
16. (with Mohammad A. Rezaei) Green's function for chordal SLE curves. *Probab. Theory Rel.*, 171(3), 1093-1155.
17. Decomposition of Schramm-Loewner evolution along its curve. *Stoch. Proc. Appl.*, 129(1):129-152, 2019.
18. (with Benjamin Mackey) Decomposition of backward SLE in the capacity parameterization. *Stat. Probab. Lett.*, 146:27-35, 2019.
19. Optimal Hölder Continuity and Dimension Properties for SLE with Minkowski Content Parametrization. To appear in *Probab. Theory Rel.*
20. (with Benjamin Mackey) Multipoint Estimates for Radial and Whole-plane SLE. To appear in *J. Stat. Phys.*

Preprints

1. SLE loop measures, arXiv:1702.08026.
2. Two-curve Green's function for 2-SLE: the interior case. In preprint, arXiv:1806.09663, 2018.
3. Two-curve Green's function for 2-SLE: the boundary case. In preprint, arXiv:1901.00254, 2019.
4. Time-reversal of multiple-force-point SLE$_\kappa(\underline{\rho})$ with all force points lying on the same side. In preprint, arXiv:1906.06005, 2019.

Invited Talks

Stochastic Processes and Their Applications. Northwestern University. July 8-12, 2019.

Random Conformal Geometry and Related Fields. KIAS, Seoul, Korea. June 18-22, 2018.

Probability seminar. Columbia University. March 10, 2018

Probability seminar. Nanjing University. May 18, 2017.

Seminar. Tianjin University. May 12, 2017.

Geometry, Analysis and Probability. KIAS, Seoul, Korea. May 8-12, 2017.

Probability seminar. University of Chicago. April 28, 2017.

Probability seminar. Michigan State University. April 6, 2017.

SLE, GFF and LQG in NYC. Columbia University, New York. March 13-17, 2017.

World Congress in Probability and Statistics. Fields Institute, Canada. July 11-15, 2016.

Recent development in SLE. Institut Mittag-Leffler, Sweden. June 13-17, 2016.

AMS Sectional Meeting at North Dakota State University. April 16-17, 2016

Probability seminar. Michigan State University. April 14, 2016.

Everything is complex: a complex analysis conference. Saas-fee, Switzerland. March 6-11, 2016.

Geometry of random walks and SLE: a birthday conference for Greg Lawler. University of Cambridge, UK. June 15-19, 2015.

AMS Sectional Meeting at Michigan State University (two talks). March 14-15, 2015.

A workshop on Schramm-Loewner evolution. TU Berlin, Germany. November 17-21, 2014.

Probability seminar. Michigan State University. November 14, 2013.

Probability seminar. University of Rochester. September 20, 2013.

Workshop IV: Quasiconformal Geometry and Elliptic PDEs. IPAM, Los Angeles. May 20-24, 2013.

Colloquium. University of Virginia. January 31, 2013.

Tsinghua-Sanya International Mathematics Forum. Sanya, China. January 4-9, 2013.

Seminar. Nanjing University. Nanjing, China. December 29, 2012.

Seminar. Mathematical Sciences Center of Tsinghua University. Beijing, China. December 18, 2012.

Workshop on statistical mechanics and conformal invariance. MSRI, Berkeley. March 27, 2012.

Analysis seminar. Northeastern University. November 18, 2011.

Colloquium. Nankai University. May 9, 2011.

Analysis seminar. University of Washington. May 5, 2011.

Sloan lecture. Michigan State University. March 22, 2011.

Probability seminar. Massachusetts Institute of Technology. March 7, 2011.

Colloquium. Department of Statistics. Michigan State University. December 7, 2010.

Analysis, PDE and Mathematical Physics seminar. Michigan State University. October 13, 2010.

Probability seminar. Michigan State University. November 11, 2010.

The 73rd annual meeting of the institute of Mathematical Statistics. Gothenburg, Sweden. August 9-13, 2010.

Conference "Conformal maps from probability to physics". Monte Verità, Ascona, Ticino, Switzerland. May 23-28, 2010.

AMS Sectional Meeting Special Sessions. Albuquerque, NM. April 17-18, 2010.

Probability seminar. University of Chicago. March 5, 2010.

Analysis, PDE and Mathematical Physics seminar. Michigan State University. February 3, 2010.

Oded Schramm Memorial Conference. Microsoft research, Seattle. August 30-31, 2009.

Colloquium. University of Oregon. February 20, 2009.

Colloquium. Michigan State University. February 13, 2009.

Colloquium. Carnegie Mellon University. February 9, 2009.

Colloquium. Georgia Institute of Technology. February 2, 2009.

Colloquium. University of Colorado. January 30, 2009.

Colloquium. University of California at Los Angeles. January 29, 2009.

Analysis seminar. University of California at Los Angeles. January 28, 2009.

Colloquium. Duke University. January 26, 2009.

Colloquium. University of Minnesota. January 23, 2009.

Colloquium. University of California at Irvine. January 5, 2009.

Colloquium. Rice University. December 5, 2008.

Analysis and probability seminar. University of Connecticut. October 17, 2008.

Workshop on Stochastic Loewner Evolution and Scaling Limits. Centre de recherches mathématiques (CRM), Canada. August 4-9, 2008.

Analysis seminar. Yale University. April 7, 2008.

The Fifth Workshop on Markov Processes and Related Topics. Beijing Normal University, China. July 14-18, 2007.

Annual PCMI Summer Session: Research Program in Statistical Mechanics. Park City Mathematics Program (PCMI). July 1-21, 2007.

Colloquium. Kansas State University. January 26, 2007.

Probability seminar. UC Berkeley. April 28, 2006.

Seymour Sherman Lecture and Conference, Probability and Statistical Physics. Indiana University. April 21-23, 2006.

Probability seminar. Beijing University, China. May 30, 2005.

Probability seminar. UCLA. November 10, 2004.

Analysis seminar. Caltech. March, 2004.

Teaching

Random Variables and Stochastic Processes (MTH 925). Fall 2019.

Analysis I (MTH 320). Fall 2019.

Random Variables and Stochastic Processes, II (MTH 992). Spring 2019.

Mentoring undergraduate research on SS 15 and SS 18.

Advising PhD student Rami Fakhry since SS16.

Advising PhD student Benjamin Mackey from FS13 to SS 17.

Random Variables and Stochastic Processes (MTH 925). Fall 2018.

Honors Complex Analysis (MTH 428H). Fall 2018.

Complex Analysis I (MTH 829). Spring 2017. Graduate course.

Random Variables and Stochastic Processes (MTH 992-002). Fall 2016.

Honors Complex Analysis (MTH 428H). Fall 2016.

Complex Analysis I (MTH 829). Spring 2016. Graduate course.

Honors Complex Analysis (MTH 428H). Fall 2015.

Lectures on two-dimensional critical percolation. Fall 2015. Graduate course.

Analysis I (MTH 320). Spring 2015.

Complex Analysis I (MTH 829). Spring 2015.

Honors Complex Analysis (MTH 428H). Fall 2014.

Complex Analysis I (MTH 829). Spring 2014.

Honors Complex Analysis (MTH 428H). Fall 2013.

Complex Analysis I (MTH 829). Spring 2013.

Complex Analysis (MTH 425). Fall 2012.

Honors Complex Analysis (MTH 428H). Fall 2012.

Introduction of Stochastic Loewner Evolution (MTH 992). Fall 2011.

Analysis I (MTH 320). Spring 2011.

Ordinary Differential Equations (MTH 340). Fall 2010.

Analysis II (MTH 421). Fall 2010.

Ordinary Differential Equations (MTH 340) Spring 2010.

Calculus One (MTH 132) Fall 2009.

Probability and Stochastic Processes. Graduate course, Yale University. Spring 2008.

Introduction to Stochastic Loewner Evolution. Graduate course, Yale University. Fall 2008.

Calculus of One Variable, II. Undergraduate course, Yale University. Fall 2008.

Calculus of One Variable, I. Undergraduate course, Yale University. Fall 2007 and Spring 2008.

Introduction to Complex Analysis. Undergraduate course, UC Berkeley. Fall 2004 - Spring 2007.

Introduction to Analysis. Undergraduate course, UC Berkeley. Fall 2004 - Spring 2007.

Academic Services

Mentoring an undergraduate student team on a research project about two-dimensional statistical lattice models. The team is composed of an exchange student: Xiaoguang Chen and two MSU students: Brandon Hu and Anirban Sarkar.

Graduate Studies Committee in 2017-18.

Two hiring committees in 2016-17.

Two hiring committees in 2015-16.

Hiring committee in 2014-15.

Organizer of the probability seminar.

Manager of the seminar fund and Marik fund for the Analysis-PDE-DS group from FS 15 to SS 17.

Organizing a special session of the AMS sectional meeting held at MSU on March 14-15, 2015.

Dissertation Defense Committee for Nicholas Boros and Alexander Reznikov.

Comprehensive Committee for Alexander Reznikov, Benjamin Mackey, Tyler Bongers, and Rami Fakhry, Christos Grigoriadis, Arman Tavakoli, Georgios Psaromiligkos, Michail Paparizos.

Qualifying Exam Committee for Aug and Dec13, Aug 14, Jan and Aug 15, Jan and Aug 16.

Advising PhD student Rami Fakhry since SS16.

Advising PhD student Benjamin Mackey from FS13 to SS17.

Postdoc mentor for Mohammad Rezaei from FS 13 to SS 16.

Mentoring undergraduate research on SS 15 and SS 18.

Referee for
Ann. Math.; *Ann. Probab.*; *Probab. Theory Rel.*; *J. Eur. Math. Soc.*; *Stat. Probab. Lett.*; *J. Theoret. Probab.*; *Internat. Math. Res. Notices*; *Lat. Am. J. Probab. Math. Stat.*; *Electron. J. Probab.*; *Indiana U. Math. J.*; *Commun. Math. Phys.*; *Ann. Probab.*; *T. Am. Math. Soc.*; *Ann. I. H. Poincare-Pr.*; *Israel J. Math.*; *Stoch. Proc. Appl.*