



Sourav Chatterjee

Professor of Statistics and of Mathematics

 Curriculum Vitae available Online

Bio

ACADEMIC APPOINTMENTS

- Professor, Statistics
- Professor, Mathematics

ADMINISTRATIVE APPOINTMENTS

- Professor of Statistics and Mathematics, Stanford University, (2013- present)
- Visiting Associate Professor of Statistics and Mathematics, Stanford University, (2012-2013)
- Associate Professor of Mathematics, Courant Institute, New York University, (2009-2013)
- Associate Professor of Statistics and Mathematics, University of California, Berkeley, (2009-2011)
- Visiting Professor of Mathematics, Université de Toulouse, (2008-2008)
- Assistant Professor of Statistics, University of California, Berkeley, (2006-2009)
- Visiting Neyman Assistant Professor of Statistics, University of California, Berkeley, (2005-2006)

HONORS AND AWARDS

- Infosys Prize in Mathematical Sciences, Infosys Science Foundation (2020)
- Fellow of IMS, Institute of Mathematical Statistics (2018)
- ICM Invited Talk, International Congress of Mathematicians (2014)
- IISA Young Researcher Award, International Indian Statistical Association (2013)
- Line and Michel Loeve International Prize in Probability, University of California, Berkeley (2013)
- First recipient of the Doeblin Prize in Probability, Bernoulli Society with sponsorship from Springer-Verlag (2012)
- IMS Medallion Lecture, Institute of Mathematical Statistics (2012)
- Rollo Davidson Prize, Rollo Davidson Trustees, University of Cambridge (2010)
- Tweedie New Researcher Award, Institute of Mathematical Statistics (2008)
- Sloan Research Fellowship in Mathematics, Alfred P. Sloan Foundation (2007 - 2009)

BOARDS, ADVISORY COMMITTEES, PROFESSIONAL ORGANIZATIONS

- Associate editor, Communications in Mathematical Physics (2019 - present)
- Associate editor, Probability Theory and Related Fields (2012 - 2015)
- Editor, Sankhya, Series A (2012 - 2015)
- Associate editor, Annals of Probability (2009 - 2014)

- Associate editor, *Annales de l'Institut Henri Poincaré (B)* (2008 - 2013)

PROFESSIONAL EDUCATION

- Bachelor, Indian Statistical Institute, Kolkata , Statistics (2000)
- Master, Indian Statistical Institute, Kolkata , Statistics (2002)
- Ph.D., Stanford University , Statistics (2005)

Teaching

COURSES

2021-22

- Linear Algebra and Matrix Theory: MATH 113 (Spr)
- Stein's Method: STATS 324 (Spr)
- Theory of Probability II: MATH 230B, STATS 310B (Win)

2020-21

- Real Analysis: MATH 205A (Aut)
- Theory of Probability I: MATH 230A, STATS 310A (Aut)

2019-20

- Introduction to Probability Theory: MATH 151 (Win)
- Introduction to Stochastic Processes II: STATS 218 (Spr)
- Theory of Probability III: MATH 230C, STATS 310C (Spr)

2018-19

- Mathematical Methods of Classical Mechanics: MATH 137 (Spr)
- Theory of Probability I: MATH 230A, STATS 310A (Aut)
- Topics in Mathematical Physics: MATH 273, STATS 359 (Aut)

STANFORD ADVISEES

Doctoral Dissertation Reader (AC)

Zexin Pan, Mackenzie Simper

Postdoctoral Faculty Sponsor

Arka Adhikari

Doctoral Dissertation Advisor (AC)

Souvik Ray

Master's Program Advisor

Laura Bryant, Cam Burton, Florence Chen, Noah Cowan, Raphael Eguchi, Irena Gao, Lynette Gao, Shantelle Gao, Jiacheng Ge, Kushagra Gupta, Hunter Guru

Publications

PUBLICATIONS

- **Superconcentration in surface growth** *RANDOM STRUCTURES & ALGORITHMS*
Chatterjee, S.
2022

- **Convergence of Deterministic Growth Models** *ARCHIVE FOR RATIONAL MECHANICS AND ANALYSIS*
Chatterjee, S., Souganidis, P. E.
2022
- **A PHASE TRANSITION FOR REPEATED AVERAGES** *ANNALS OF PROBABILITY*
Chatterjee, S., Diaconis, P., Sly, A., Zhang, L.
2022; 50 (1): 1-17
- **A SIMPLE MEASURE OF CONDITIONAL DEPENDENCE** *ANNALS OF STATISTICS*
Azadkia, M., Chatterjee, S.
2021; 49 (6): 3070-3102
- **Speeding up Markov chains with deterministic jumps (vol 178, pg 1193, 2020)** *PROBABILITY THEORY AND RELATED FIELDS*
Chatterjee, S., Diaconis, P.
2021
- **A Probabilistic Mechanism for Quark Confinement** *COMMUNICATIONS IN MATHEMATICAL PHYSICS*
Chatterjee, S.
2021
- **Average Gromov hyperbolicity and the Parisi ansatz** *ADVANCES IN MATHEMATICS*
Chatterjee, S., Sloman, L.
2021; 376
- **A Deterministic Theory of Low Rank Matrix Completion** *IEEE TRANSACTIONS ON INFORMATION THEORY*
Chatterjee, S.
2020; 66 (12): 8046–55
- **Fluctuation lower bounds in planar random growth models** *ANNALES DE L INSTITUT HENRI POINCARÉ-PROBABILITÉS ET STATISTIQUES*
Bates, E., Chatterjee, S.
2020; 56 (4): 2406–27
- **LOCALIZATION IN GAUSSIAN DISORDERED SYSTEMS AT LOW TEMPERATURE** *ANNALS OF PROBABILITY*
Bates, E., Chatterjee, S.
2020; 48 (6): 2755–2806
- **Speeding up Markov chains with deterministic jumps** *PROBABILITY THEORY AND RELATED FIELDS*
Chatterjee, S., Diaconis, P.
2020
- **A New Coefficient of Correlation** *JOURNAL OF THE AMERICAN STATISTICAL ASSOCIATION*
Chatterjee, S.
2020
- **Wilson Loops in Ising Lattice Gauge Theory** *COMMUNICATIONS IN MATHEMATICAL PHYSICS*
Chatterjee, S.
2020
- **CONSTRUCTING A SOLUTION OF THE (2+1)-DIMENSIONAL KPZ EQUATION** *ANNALS OF PROBABILITY*
Chatterjee, S., Dunlap, A.
2020; 48 (2): 1014–55
- **LOCALIZATION IN RANDOM GEOMETRIC GRAPHS WITH TOO MANY EDGES** *ANNALS OF PROBABILITY*
Chatterjee, S., Harel, M.
2020; 48 (2): 574–621
- **THE ENDPOINT DISTRIBUTION OF DIRECTED POLYMERS** *ANNALS OF PROBABILITY*
Bates, E., Chatterjee, S.
2020; 48 (2): 817–71

- **Rigidity of the three-dimensional hierarchical Coulomb gas** *PROBABILITY THEORY AND RELATED FIELDS*
Chatterjee, S.
2019; 175 (3-4): 1123–76
- **Proof of the Path Localization Conjecture for Directed Polymers** *COMMUNICATIONS IN MATHEMATICAL PHYSICS*
Chatterjee, S.
2019; 370 (2): 703–17
- **A GENERAL METHOD FOR LOWER BOUNDS ON FLUCTUATIONS OF RANDOM VARIABLES** *ANNALS OF PROBABILITY*
Chatterjee, S.
2019; 47 (4): 2140–71
- **Central Limit Theorem for the Free Energy of the Random Field Ising Model** *JOURNAL OF STATISTICAL PHYSICS*
Chatterjee, S.
2019; 175 (1): 185–202
- **Rigorous Solution of Strongly Coupled SO(N) Lattice Gauge Theory in the Large N Limit** *COMMUNICATIONS IN MATHEMATICAL PHYSICS*
Chatterjee, S.
2019; 366 (1): 203–68
- **On the Decay of Correlations in the Random Field Ising Model** *COMMUNICATIONS IN MATHEMATICAL PHYSICS*
Chatterjee, S.
2018; 362 (1): 253–67
- **THE SAMPLE SIZE REQUIRED IN IMPORTANCE SAMPLING** *ANNALS OF APPLIED PROBABILITY*
Chatterjee, S., Diaconis, P.
2018; 28 (2): 1099–1135
- **Arbitrarily small perturbations of Dirichlet Laplacians are quantum unique ergodic** *JOURNAL OF SPECTRAL THEORY*
Chatterjee, S., Galkowski, J.
2018; 8 (3): 909–47
- **A CENTRAL LIMIT THEOREM FOR A NEW STATISTIC ON PERMUTATIONS** *INDIAN JOURNAL OF PURE & APPLIED MATHEMATICS*
Chatterjee, S., Diaconis, P.
2017; 48 (4): 561–73
- **Discussion of the Paper on Concentration for (Regularized) Empirical Risk Minimization by Sara van de Geer and Martin Wainwright** *SANKHYA-SERIES A-MATHEMATICAL STATISTICS AND PROBABILITY*
Chatterjee, S.
2017; 79 (2): 208-211
- **MINIMAL SPANNING TREES AND STEIN'S METHOD** *ANNALS OF APPLIED PROBABILITY*
Chatterjee, S., Sen, S.
2017; 27 (3): 1588–1645
- **Large Deviations for Random Graphs: Ecole d'Ete de Probabilites de Saint-Flour XLV - 2015** *LARGE DEVIATIONS FOR RANDOM GRAPHS: ECOLE D'ETE DE PROBABILITES DE SAINT-FLOUR XLV - 2015*
Chatterjee, S.
2017; 2197: 1–167
- **The leading term of the Yang-Mills free energy** *JOURNAL OF FUNCTIONAL ANALYSIS*
Chatterjee, S.
2016; 271 (10): 2944-3005
- **AN INTRODUCTION TO LARGE DEVIATIONS FOR RANDOM GRAPHS** *BULLETIN OF THE AMERICAN MATHEMATICAL SOCIETY*
Chatterjee, S.
2016; 53 (4): 617-642
- **Nonlinear large deviations** *ADVANCES IN MATHEMATICS*
Chatterjee, S., Dembo, A.

2016; 299: 396-450

- **Absence of Replica Symmetry Breaking in the Random Field Ising Model** *COMMUNICATIONS IN MATHEMATICAL PHYSICS*
Chatterjee, S.
2015; 337 (1): 93-102
- **MATRIX ESTIMATION BY UNIVERSAL SINGULAR VALUE THRESHOLDING** *ANNALS OF STATISTICS*
Chatterjee, S.
2015; 43 (1): 177-214
- **A NEW PERSPECTIVE ON LEAST SQUARES UNDER CONVEX CONSTRAINT** *ANNALS OF STATISTICS*
Chatterjee, S.
2014; 42 (6): 2340-2381
- **Invariant Measures and the Soliton Resolution Conjecture** *COMMUNICATIONS ON PURE AND APPLIED MATHEMATICS*
Chatterjee, S.
2014; 67 (11): 1737-1842
- **Fluctuations of the Bose-Einstein condensate** *JOURNAL OF PHYSICS A-MATHEMATICAL AND THEORETICAL*
Chatterjee, S., Diaconis, P.
2014; 47 (8)
- **Superconcentration and Related Topics**
Chatterjee, S.
Springer, Berlin-Heidelberg.2014
- **A short survey of Stein's method**
Chatterjee, S., Jang, S. Y., Kim, Y. R., Lee, D. W., Yie
Kyung Moon SA Co Ltd.2014: 1-24
- **ESTIMATING AND UNDERSTANDING EXPONENTIAL RANDOM GRAPH MODELS** *ANNALS OF STATISTICS*
Chatterjee, S., Diaconis, P.
2013; 41 (5): 2428-2461
- **Central limit theorem for first-passage percolation time across thin cylinders** *PROBABILITY THEORY AND RELATED FIELDS*
Chatterjee, S., Dey, P. S.
2013; 156 (3-4): 613-663
- **Random overlap structures: properties and applications to spin glasses** *PROBABILITY THEORY AND RELATED FIELDS*
Arguin, L., Chatterjee, S.
2013; 156 (1-2): 375-413
- **The universal relation between scaling exponents in first-passage percolation** *ANNALS OF MATHEMATICS*
Chatterjee, S.
2013; 177 (2): 663-697
- **The missing log in large deviations for triangle counts** *RANDOM STRUCTURES & ALGORITHMS*
Chatterjee, S.
2012; 40 (4): 437-451
- **Probabilistic methods for discrete nonlinear Schrodinger equations** *COMMUNICATIONS ON PURE AND APPLIED MATHEMATICS*
Chatterjee, S., Kirkpatrick, K.
2012; 65 (5): 727-757
- **A new approach to strong embeddings** *PROBABILITY THEORY AND RELATED FIELDS*
Chatterjee, S.
2012; 152 (1-2): 231-264
- **Random Multiplicative Functions in Short Intervals** *INTERNATIONAL MATHEMATICS RESEARCH NOTICES*
Chatterjee, S., Soundararajan, K.

2012: 479-492

- **Large deviations for random matrices** *Communications on Stochastic Analysis*
Chatterjee, S., Varadhan, S. R.
2012; 6 (1): 1-13
- **A Combinatorial Analysis of Interacting Diffusions** *JOURNAL OF THEORETICAL PROBABILITY*
Chatterjee, S., Pal, S.
2011; 24 (4): 939-968
- **The large deviation principle for the Erdos-Renyi random graph** *EUROPEAN JOURNAL OF COMBINATORICS*
Chatterjee, S., Varadhan, S. R.
2011; 32 (7): 1000-1017
- **RANDOM GRAPHS WITH A GIVEN DEGREE SEQUENCE** *ANNALS OF APPLIED PROBABILITY*
Chatterjee, S., Diaconis, P., Sly, A.
2011; 21 (4): 1400-1435
- **NONNORMAL APPROXIMATION BY STEIN'S METHOD OF EXCHANGEABLE PAIRS WITH APPLICATION TO THE CURIE-WEISS MODEL** *ANNALS OF APPLIED PROBABILITY*
Chatterjee, S., Shao, Q.
2011; 21 (2): 464-483
- **Spectral clustering and the high-dimensional Stochastic Block Model** *Annals of Statistics*
Chatterjee, S., Rohe, K., Yu, B.
2011; 39 (4): 1878-1915
- **Exponential Approximation by Stein's Method and Spectral Graph Theory** *ALEA-LATIN AMERICAN JOURNAL OF PROBABILITY AND MATHEMATICAL STATISTICS*
Chatterjee, S., Fulman, J., Roellin, A.
2011; 8: 197-223
- **APPLICATIONS OF STEIN'S METHOD FOR CONCENTRATION INEQUALITIES** *ANNALS OF PROBABILITY*
Chatterjee, S., Dey, P. S.
2010; 38 (6): 2443-2485
- **Spin glasses and Stein's method** *PROBABILITY THEORY AND RELATED FIELDS*
Chatterjee, S.
2010; 148 (3-4): 567-600
- **PHASE TRANSITIONS IN GRAVITATIONAL ALLOCATION** *GEOMETRIC AND FUNCTIONAL ANALYSIS*
Chatterjee, S., Peled, R., Peres, Y., Romik, D.
2010; 20 (4): 870-917
- **Gravitational allocation to Poisson points** *ANNALS OF MATHEMATICS*
Chatterjee, S., Peled, R., Peres, Y., Romik, D.
2010; 172 (1): 617-671
- **A phase transition behavior for Brownian motions interacting through their ranks** *PROBABILITY THEORY AND RELATED FIELDS*
Chatterjee, S., Pal, S.
2010; 147 (1-2): 123-159
- **AN OBSERVATION ABOUT SUBMATRICES** *ELECTRONIC COMMUNICATIONS IN PROBABILITY*
Chatterjee, S., Ledoux, M.
2009; 14: 495-500
- **Central Limit Theorems for the Energy Density in the Sherrington-Kirkpatrick Model** *JOURNAL OF STATISTICAL PHYSICS*
Chatterjee, S., Crawford, N.
2009; 137 (4): 639-666
- **CONSISTENT ESTIMATES OF DEFORMED ISOTROPIC GAUSSIAN RANDOM FIELDS ON THE PLANE** *ANNALS OF STATISTICS*

- Anderes, E., Chatterjee, S.
2009; 37 (5A): 2324-2350
- **Fluctuations of eigenvalues and second order Poincare inequalities** *PROBABILITY THEORY AND RELATED FIELDS*
Chatterjee, S.
2009; 143 (1-2): 1-40
 - **A new method of normal approximation** *ANNALS OF PROBABILITY*
Chatterjee, S.
2008; 36 (4): 1584-1610
 - **Multivariate normal approximation using exchangeable pairs** *ALEA-LATIN AMERICAN JOURNAL OF PROBABILITY AND MATHEMATICAL STATISTICS*
Chatterjee, S., Meckes, E.
2008; 4: 257-283
 - **Estimation in spin glasses: A first step** *ANNALS OF STATISTICS*
Chatterjee, S.
2007; 35 (5): 1931-1946
 - **Stein's method for concentration inequalities** *PROBABILITY THEORY AND RELATED FIELDS*
Chatterjee, S.
2007; 138 (1-2): 305-321
 - **Concentration of Haar measures, with an application to random matrices** *JOURNAL OF FUNCTIONAL ANALYSIS*
Chatterjee, S.
2007; 245 (2): 379-389
 - **A generalization of the Lindeberg principle** *ANNALS OF PROBABILITY*
Chatterjee, S.
2006; 34 (6): 2061-2076
 - **Exchangeable pairs and Poisson approximation** *Probability Surveys*
Chatterjee, S., Diaconis, P., Meckes, E.
2005; 2: 64-106
 - **Exchangeable pairs and Poisson approximation** *PROBABILITY SURVEYS*
Chatterjee, S., Diaconis, P., Meckes, E.
2005; 2: 64-106
 - **Concentration inequalities with exchangeable pairs** *Ph.D. thesis. Stanford University*
Chatterjee, S.
2005
 - **A new method for bounding rates of convergence of empirical spectral distributions** *JOURNAL OF THEORETICAL PROBABILITY*
Chatterjee, S., Bose, A.
2004; 17 (4): 1003-1019
 - **Limiting spectral distributions of large dimensional random matrices** *Journal of the Indian Statistical Association*
Chatterjee, S., Bose, A., Gangyopadhyay, S.
2003; 41 (2): 221-259