Karl Rohe

Statistics Department
1300 University Avenue
University of Wisconsin-Madison
Madison, WI 53706 karlrohe@stat.wisc.edu

Education

Ph.D., University of California, Berkeley, Statistics. May 2011
Designated Emphasis in Communication, Computation, and Statistics.
Thesis: "Analysis of Spectral Clustering and the Lasso under Nonstandard Statistical Models" Advisor: Bin Yu

B.S., Michigan State University, Statistics. May 2006. *Summa cum laude.* Minor in Environmental Economics. *Study Abroad*: Argentina; Switzerland; China; and Netherlands, France, and Spain.

Positions

Assistant Professor, Department of Statistics, University of Wisconsin-Madison. Fall 2011 - Present.

Fellowships and Awards

NSF-DMS Spectral Methods for Contextualizing relational data. Grant number 1309998.

UW Graduate School fall research competition June 2012 and 2013

Evelyn Fix Memorial Medal and Citation, awarded to the PhD student on the Berkeley campus showing the greatest promise in statistical research, with preference for applications to biology and problems of health. (2011)

National Science Foundation Funded Research Experience for Undergraduates in China. (Summer 2005)

Lumsden-Valrance Scholarship (Fall 2004 - Spring 2006)

L.C. Plant Merit Award (Spring 2006)

Broad Professional Interests

Knowledge Creation with Statistics. Data collection, exploratory analysis, visualization, modeling, validation.

Statistical Machine Learning. Special attention to multivariate methods, clustering, and computationally tractable methods for model selection in high-dimensions.

Applications to complex systems. e.g. social networks.

Publications / Manuscripts

[1] Tai Qin and Karl Rohe. Regularized Spectral Clustering under the Degree-Corrected Stochastic Blockmodel. *Accepted at NIPS*, 2013.

[2] V Vu, J Cho, J Lei, and K Rohe. Fantope Projection and Selection: A near-optimal convex relaxation of sparse PCA. *Accepted at NIPS*, 2013.

[3] Q Cui, K Rohe, and Z Zhang. Discussion of: Estimating the historical and future probabilities of large terrorist events. *In press at AOAS*, 2013.

[4] Karl Rohe and Tai Qin. The blessing of transitivity in sparse and stochastic networks. *Under review, arXiv preprint arXiv:1307.2302*, 2013.

[5] Jinzhu Jia and Karl Rohe. Preconditioning to comply with the irrepresentable condition. *preprint arXiv:1208.5584*, 2012.

[6] Karl Rohe. A tale of two researchers. *Amstat News (not peer-reviewed)*, October1, 2012.

[7] K Rohe, T Qin, and H Fan. The highest dimensional stochastic blockmodel with a regularized estimator. *Revised and resubmitted to Statistica Sinica*, 2013.

[8] Karl Rohe and Bin Yu. Co-clustering for directed graphs; the stochastic co-blockmodel and a spectral algorithm. *arXiv preprint arXiv:1204.2296*, 2012.

[9] K Rohe, B Yu, and S Chatterjee. Spectral clustering and the high dimensional stochastic blockmodel. *The Annals of Statistics*, 39(4):1878–1915, 2011.

[10] J Jia, K Rohe, and B Yu. The Lasso under poisson-like heteroskedasticity. *Statistica Sinica*, 23:99–118, 2013.

Paper Presentations

[1] K. Rohe, S. Chatterjee, and B. Yu. Spectral clustering under the Stochastic Block Model with a growing number of blocks. In *Invited Session, JSM 2010*, Vancouver, B.C.

[2] K. Rohe, S. Chatterjee, and B. Yu. Spectral clustering under the Stochastic Block Model with a growing number of blocks. In *RAND Corp. July 14, 2010*, Santa Monica, CA. Simulcast to Pittsburgh, PA and Washington D.C.

[3] K. Rohe and B. Yu. A Spectral Technique to Explore the Asymmetric Flow of Information in Directed Networks. In *Army Conference on Applied Statistics. October 20, 2011*, Annapolis, MD.

[4] K. Rohe and B. Yu. Clustering in directed graphs; a statistical model and a spectral algorithm. In *Information Theory and Applications. February 9, 2012*, San Diego, CA.

[5] K. Rohe and B. Yu. Co-clustering for Directed Graphs; the Stochastic Co-Blockmodel and a Spectral Algorithm. In *Machine Learning: Theory and Computation. March 29, 2012*, Minneapolis, MN.

[6] K. Rohe and B. Yu. Co-clustering for Directed Graphs; the Stochastic Co-Blockmodel and a Spectral Algorithm. In *Invited Session, Biennial conference of the ASA's Section on Statistical Learning and Data Mining. June, 2012*, Ann Arbor, MI.

[7] K. Rohe and B. Yu. Co-clustering for Directed Graphs; the Stochastic Co-Blockmodel and a Spectral Algorithm. In *Invited Session, International Chinese Statistical Association Applied Statistics Symposium. June, 2012*, Boston, MA.

[8] K. Rohe and B. Yu. Co-clustering for Directed Graphs; the Stochastic Co-Blockmodel and a Spectral Algorithm. In *Invited Session, WNAR, June 2012*, Fort Collins, CO.

[9] K. Rohe and B. Yu. Co-clustering for Directed Graphs; the Stochastic Co-Blockmodel and a Spectral Algorithm. In *Invited Session, JSM, Summer 2012*, San Diego, CA.

[10] Rohe and Jia. Preconditioning for sparse inference. In *Johns Hopkins Applied Math Department Colloquium, November 2012.*

[11] K. Rohe, T. Qin, and F. Haoyang. The blessing of dimensionality for sparse Stochastic Blockmodels. In *Invited speaker for Workshop on Statistics in Complex Networks: Theory and Applications, January 2013*, Eindhoven, The Netherlands.

[12] Rohe and Jia. Preconditioning for sparse inference. In *Duke ECE Department Colloquium, February 2013.*

[13] K. Rohe, T. Qin, and M. Khabbazian. Local inference, Transitivity, and Small World Stochastic Blockmodels. In *NYU Stern's IOMS Colloquium, April 2013.*

[14] Rohe and Jia. Preconditioning for sparse inference. In *Duke Workshop on Sensing and Analysis of High-Dimensional Data, 2013.*

[15] K. Rohe, J. Cho, and S.. Roy. Studying the context-specificity of network structure. In *Invited session, JSM Montreal 2013.*

[16] Rohe and Qin. The blessing of transitivity. In *University of Washington, Statistics Department Seminar, October 2013.*

Poster Presentations

[1] K. Rohe, J. Jia, and B. Yu. The Lasso under heteroskedasticity. In *Innovation and Inventiveness in Statistics Methodologies: workshop at Yale in honor of John Hartigan*, New Haven, CT, 2009.

[2] K. Rohe, S. Chatterjee, and B. Yu. Spectral convergence of the normalized graph Laplacian under the latent space model. In *SAMSI: Program on Complex Networks*, Research Triangle, NC, 2010.

[3] Rohe and Qin. The blessing of transitivity. In *Duke Workshop on Sensing and Analysis of High-Dimensional Data, 2013.*

Funding

NSF-DMS Spectral Methods for Contextualizing relational data. Grant number 1309998.

Financial support from UW Graduate School fall competition received in June 2012 and June 2013.

Graduate student advising

Tai Qin (4th year, co-advised with Grace Whaba), Juhee Cho (4th year), Norbert Binkiewicz (4th year), Mohammad Khabbazian (3rd year EE department), Song Wang (2nd year).

Additional projects with: Haoyang Fan, Chenliang Xu, Qiurong Cui.

Exam committee: Yi Chai, Zhigeng Geng, Lie Xiong, Qiurong Cui, Dong Liu (Educational Sciences), Bryan Keller (Educational Sciences).

Teaching

Introduction to Mathematical Statistics (Stat 311) Fall 2011, Spring 2012, Fall 2012, Spring 2013.

Applied Linear Regression (Stat 333) Spring 2013, Fall 2014.

Graduate Student Instructor @ Berkeley Ph.D. level Applied Statistics (stat 215), Upper Division Math Stat (stat 135), Intro to Prob and Stat for Business (stat 21).

University Service

Department Committees: Admissions, Seminar, TA Training, MS Exam. (At various points in time)

In graduate school: Treasurer for the Berkeley Statistics Graduate Student Association and Graduate assembly representative. Team Captain for an intramural ultimate frisbee team: The New Jerzy Neymans.

Professional Service

Ad hoc reviewer Annals of Statistics, Proceedings of the National Academy of Sciences, Statistical Analysis and Data Mining, Journal of Computational and Graphical Statistics, Political Analysis, Statistica Sinica, Biometrika, Journal of Multivariate Analysis, Neural Information Processing Systems (NIPS), Annals of Applied Statistics, Technometrics,

Committee for Young Statisticians International Statistical Institute (ISI)

Associate Editor for the Stat blog (2013-?) Stat is ISI's journal for rapid dissemination of statistical research.