

Chad M. Schafer

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citizenship: U.S.A.

Positions Held

Assistant Professor – Department of Statistics, **Carnegie Mellon University**, since 9/2007

Visiting Assistant Professor – Department of Statistics, **Carnegie Mellon University**, 9/2004 to 9/2007

Research Assistant – Mathematics and Computer Science Div., **Argonne National Lab.**, 1/1995 to 8/1996

Education

Ph.D. in Statistics – **University of California, Berkeley**, May 2004

M.S. in Statistics – **University of Illinois, Urbana-Champaign**, May 1998

B.S. (Summa Cum Laude) – **Western Michigan University**, May 1995

Research Papers

Schafer, C. and P. Stark. (2009) “Constructing Confidence Regions of Optimal Expected Size.” *Journal of the American Statistical Association*. (104): 1080-1089.

Freeman, P., J. Newman, A. Lee, J. Richards, and C. Schafer. (2009) “Photometric Redshift Estimation Using SCA.” *Monthly Notices of the Royal Astronomical Society*. (398): 2012-2021.

Buchman, S., Lee, A. and C. Schafer. (2009) “High-Dimensional Density Estimation via SCA: An Example in the Modelling of Hurricane Tracks.” To appear in *Statistical Methodology*.

Richards, J., P. Freeman, and A. Lee, and C. Schafer. (2009) “Accurate Parameter Estimation for Star Formation History in Galaxies using SDSS Spectra.” *Monthly Notices of the Royal Astronomical Society*. (399): 1044-1057.

Richards, J., P. Freeman, and A. Lee, and C. Schafer. (2009) “Exploiting Low-Dimensional Structure in Astronomical Spectra.” *Astrophysical Journal*. (691): 32-42.

Schafer, C. and K. Doksum. (2009) “Selecting Local Models in Multiple Regression by Maximizing Power.” *Metrika*. (69): 283-304.

Freeman, P., J. Richards, C. Schafer, A. Lee. (2008) “Astrostatistics: The Final Frontier.” *Chance*. Volume 21, Number 3.

Schafer, C. (2007) “A Statistical Method for Estimating Luminosity Functions using Truncated Data.” *Astrophysical Journal*. (661):703-713.

Bryan, B., H. McMahan, C. Schafer, and J. Schneider. (2007) “Efficiently Computing Minimax Expected-Size Confidence Regions.” Accepted paper for International Conference on Machine Learning.

Doksum, K. and C. Schafer. (2006) “Powerful Choices: Tuning Parameter Selection Based on Power.” In *Frontiers in Statistics*, J. Fan and H. Koul, editors. London: Imperial College Press. 113-141.

Schafer, C. and P. Stark. (2003) “Using what we know: Inference with physical constraints.” *Statistical Problems in Particle Physics, Astrophysics and Cosmology*.

Jacob, R., C. Schafer, I. Foster, M. Tobis, and J. Anderson. (2001) “Computational Design and Performance of the Fast Ocean Atmosphere Model, Version One.” *Proc. 2001 International Conference on Computational Science*, eds. V. N. Alexandrov, J. J. Dongarra, C. J. K. Tan, Springer-Verlag. Also ANL/CGC-005-0401, April 2001.

Tobis, M., I. Foster, C. Schafer, R. Jacob, and J. Anderson. (1997) “FOAM: Expanding the Horizons of Climate Modeling.” *Technical Paper, SC97:High Performance Networking and Computing*.

Hibbard, W., J. Anderson, I. Foster, B. Paul, R. Jacob, C. Schafer, and M. Tyree. (1996) “Exploring Coupled Atmosphere-Ocean Models Using (Vis5D).” *International Journal of Supercomputer Applications*, (10): 211-222.

Grants

“Stochastic Models for High-Dimensional, Nonstandard Data.” PI: C. Schafer, Co-PIs: A. Lee and P. Freeman. NASA Proposal #08-AISR08-0112. \$250,000 for 9/2009 to 9/2011.

“MSPA - AST: Sparse Representation and Efficient Inference for Astronomical Spectra.” NSF Award #0707059. PI: A. Lee, Co-PIs: Peter Freeman and C. Schafer. NSF Proposal #08-AISR08-0112. \$240,000 for 9/2007 to 9/2010.

Talks

“Facing the Supernova Challenge: Complex Theory and Complex Data” – **Invited Talk** as part of *New England Statistics Symposium*, Boston, April 2010.

“Improved Astronomical Inferences via Nonparametric Density Estimation” – **Talk** as part of *215th American Astronomical Society Meeting*, Washington, DC, January 2010.

“Stochastic Models for High-Dimensional, Nonstandard Data” – **Talk** as part of *Conference on Intelligent Data Understanding*, NASA Ames, California, October 2009.

“Testing Cosmological Theories: Methodology for the Inference Challenges” – **Departmental Seminar**, Department of Statistics, UC Davis, October 2009.

“Issues and Directions in Parameter Estimation with Complex Models” – **Invited Talk** as part of *Statistical Frontiers of Astrophysics*, Institute for Physics and Mathematics of the Universe, Japan, September 2009.

“Improved Statistical Inference via Dimension Reduction” – **Invited Talk** as part of *COSMOSTATS09*, Ascona, Switzerland, July 2009.

“Semiparametric Bivariate Density Estimation with Irregularly Truncated Data” – **Invited Talk** as part of *Joint Statistical Meetings*, Salt Lake City, July 2007.

“Cosmological Inference via Measurements of the CMB: Nonparametric and Parametric Frequentist Approaches” – **Invited Talk** at *Probing the Distant Universe with Gravitational Waves* Workshop, November 2005.

“Two Examples of Statistical Inference using Astronomical Data” – **Departmental Seminar**, Department of Statistics, University of Wisconsin, March 2005; and **Departmental Seminar**, Department of Statistics, University of Illinois, March 2005.

Professional Service and Activities

Associate Editor for *Electronic Journal of Statistics*.

Referee for *JASA – Theory and Methods*, *JASA – Applications and Case Studies*, *The Astrophysical Journal* and *Icarus*.

“Tutorial on Nonparametric Inference, with R” (with Larry Wasserman) – **Tutorial** for astronomers as a part of *SAMSI Opening Workshop* for Astrostatistics Program, January 2006.

Gave three lectures as part of the 2010 Penn State Summer School on Astrostatistics, June 2010.

Organized special session on astrostatistics for 2006 IMS Meetings.

Consulting Projects

Analysis of UC Berkeley Library User Survey Data

From June 2001 to April 2002, was statistical consultant to a committee formed to identify important areas for improvement within the UC Berkeley library system. Designed and created a software package to perform appropriate statistical analysis of survey data and to create detailed graphical reports. Participated in presenting findings and writing summary report and code documentation.

⇒ See <http://lib.berkeley.edu/Staff/UserSurvey/> for a presentation of the results.

Consultant in Illinois Statistics Office

From September 1997 to May 1998, was statistical consultant to various university clients through the Illinois Statistics Office, the consulting service of the Department of Statistics at the University of Illinois.

⇒ See <http://www.stat.uiuc.edu/iso/> for a description of the ISO.

Courses Taught

Probability and Mathematical Statistics I – Fall 2009

Fast-paced, rigorous introduction to the mathematical theory of probability and statistics.

Advanced Probability Overview – Fall 2005, 2006, 2007, and 2008

First course in measure-theoretic probability for Ph.D. statistics students.

Introduction to Probability Models – Spring 2005, 2006 and 2007

A first course in stochastic processes for undergraduate and graduate students.

Engineering Statistics and Quality Control – Fall 2004 and Spring 2010

Introductory statistics course for engineers.

Statistics for the Lab Sciences – Spring 2008, 2009, and 2010

Introductory statistics course for biologists and chemists.