

Yazhen Wang

PERSONAL

Born in 1965, Male, US citizen.

EDUCATION

Ph.D, University of California at Berkeley, from 8/1989 to 7/1992.

M.S., East China Normal University, Shanghai, P. R. China, from 9/1985 to 6/1987.

B.S., East China Normal University, Shanghai, P. R. China, from 9/1981 to 6/1985.

EMPLOYMENT

Professor, Department of Statistics, University of Connecticut, 2004-present.

Associate Professor, Department of Statistics, University of Connecticut, 1998-2004.

Associate Professor, Department of Statistics, University of Missouri-Columbia, 98-99.

Assistant Professor, Department of Statistics, University of Missouri-Columbia, 92-98.

Special Term Visiting Professor, Shanghai University of Economics and Finance, 2005-2008.

PROFESSIONAL SERVICE and MEMBERSHIP

Fellow of Institute of Mathematical Statistics (IMS), 2005.

Fellow of American Statistical Association (ASA), 2006.

Committee to Select Administrative Officers, IMS, 2007-2010.

Elected board member of International Chinese Statistical Association.

Permanent Members of IMS & International Chinese Statistical Association.

Associate Editor, Journal of American Statistical Association, 2006-present.

Associate Editor, Statistica Sinica, 2001-2008.

Associate Editor, Journal of Korean Statistical Society, 2007-present.

Associate Editor, The Econometrics Journal, 2007-present.

Guest Editor, Statistica Sinica, Special Issue on Multiscale Methods

Program Director, National Science Foundation, 2007-present.

RESEARCH INTEREST

Financial time series and high frequency finance, wavelets, nonparametric smoothing, change points, long-memory process, self-similar process, and order restricted

statistical inferences.

RESEARCH and SCHOLARLY ACTIVITIES

Fellowship

Scholar Fellowship and 1923 Class Fellowship at the University of California at Berkeley from August of 1990 to May of 1991.

Grant Award

1. NSF Grant on project “Multiscale Analysis of High-Frequency Financial Data,” 05-08. Principal Investigator.
2. NSF Grant on project “GARCH, Diffusion, Stochastic Volatility and Wavelets,” 01-05. Principal Investigator.
3. NIH grant on project “T-Cell Responses Predict Influenza Risk in Older Adults”, 04-05. Co-PI.
4. NIH grant on “Exploratory Program Grant for Frontier Medicine Research, 01-04. Co-PI.
5. NSF computer equipment Grant, 02-05. Co-PI.
6. NSA grant on project “Function Estimation, Long-range Dependence and Indirect Data”, 98-01. Principal Investigator.
7. NSF Grant on project “Jump and Sharp Cusp Detection by Wavelets,” 94-97. Principal Investigator.
8. NSF computer equipment Grant, 95-98. Co-PI.
9. Research Board Grant from the University of Missouri on project “Locally Self-Similar Processes via Wavelets”, 97-98. Principal Investigator.
10. Research Board Grant from the University of Missouri on project “Statistical Inferences Subject to Concavity Constraints”, 93-94. Principal Investigator.

Refereed Articles

1. Wang, Y. (1994). The limit distribution of the least concave majorant of an empirical distribution. *Statistics and Probability Letter* 20, 81-84.
2. Wang, Y. (1994). Quantum Gaussian processes. *Acta Mathematicae Applicatae Sinica* 10, 315-327.
3. Wang, Y. (1994). A Bartlett-type adjustment for the likelihood ratio test statistic with an ordered alternative. *Statistics and Probability Letter* 20, 347-352.
4. Wang, Y. (1995). The L_1 theory of estimation of monotone and unimodal densities. *Journal of Nonparametric Statistics* 4, 249-261.
5. Wang, Y. (1995). Asymptotic expansions of the likelihood ratio test statistic with ordered hypotheses. *Sankhyā A.* 57, 410-423.
6. Wang, Y. (1995). Jump and sharp cusp detection by wavelets. *Biometrika* 82, 385-397.

7. Wang, Y. (1996). The L_2 risk of an isotonic estimate. *Communication in Statistics: Theory and Methods* 25, 281-294.
8. Wang, Y. (1996). Function estimation via wavelet shrinkage for long-memory data. *The Annals of Statistics* 24, 466-484.
9. Wang, Y. (1996). A likelihood ratio test against stochastic ordering in several populations. *Journal of the American Statistical Association* 91, 1676-1683.
10. Wang, Y. (1997). Fractal function estimation via wavelet shrinkage. *Journal of the Royal Statistical Society B* 59, 603-613.
11. Wang, Y. (1997). Small ball problems via wavelets for Gaussian processes. *Statistics and Probability Letter* 32, 133-139.
12. Wang, Y. (1997). Minimax estimation via wavelets for indirect long-memory data. *Journal of Statistical Planning and Inference* 64, 45-55.
13. Wang (1998). Change curve estimation via wavelets. *Journal of the American Statistical Association* 93, 163-172.
14. Wang (1999). Change-point analysis via wavelets for indirect data. *Statistica Sinica* 9, 103-117.
15. Chen, Y., Hewett, J., Wang, Y. and Johnson, J. (1999). A rank test for equality of two multivariate populations vs a particular ordered alternative. *Computational Statistics & Data Analysis* 29, 129-144.
16. Wang, Y. (1999). An overview of wavelet regularization. In *Bayesian Inference in Wavelet Based Models* (Vidakovic and Müller, eds.), pp 109-114, Springer, June 1999.
17. Wang, Y., Cavanaugh, J. E. and Song, C. (2001). Self-similarity index estimation via wavelets for locally self-similar processes. *Journal of Statistical Planning and Inference* 99, 91-110.
18. Wang, Y. (2002). Asymptotic nonequivalence of GARCH models and diffusions. *Annals of Statistics* 30, 754-783.
19. Wang, Y. and Huang, J. (2002). Limiting distribution for monotone median regression. *Journal of Statistical Planning and Inference* 107, 281-287.
20. Cavanaugh, J. , Wang, Y. and Davis, W. (2002). Local self-similar processes and their wavelet analysis, in *Handbook of Statistics, Volume 21: Stochastic Processes: Modeling and Simulation* (D.N. Shanbhag and C.R. Rao, eds.), 93-135.
21. Brown, L. D., Wang, Y. and Zhao, L. H. (2003). Statistical equivalence at suitable frequencies of GARCH and stochastic volatility models with the corresponding diffusion model. *Statistica Sinica* 13, 993-1013.
22. Dey, K. D. and Wang, Y. (2004). Wavelet modeling of priors on triangles. *Journal of Multivariate Analysis* 89, 338-350.
23. Kenny, A. M., Kleppinger, A., Wang, Y. and Prestwood, K. M.(2005). Effects of ultra-low dose estrogen therapy on muscle and physical function in older women. *Journal of the American Geriatrics Society* 53, 1973-1977.

24. Wang, Y. (2006). Selected review on wavelets. In *Frontier Statistics, Festschrift for Peter Bickel*(H.Koul and J.Fan, eds.), Imperial College Press, London, pp. 163-179.
25. Clapp, J. M. and Wang, Y. (2006). Defining neighborhood boundaries: are census tracts obsolete?" *Journal of Urban Economics* 59, 259-284.
26. McElhaney, J., Xie, D., Hager, W. D., Barry, M. B., Wang, Y., Kleppinger, A., Kwen, C., Kane, K. and Bleackley, R. C. (2006). T Cell responses are better correlates of vaccine protection in the elderly. *Journal of Immunology* **176**, 6333-6339.
27. Oncken C, Prestwood K, Kleppinger A, Wang Y, Cooney J, Raisz L. (2006). Impact of Smoking Cessation on Bone Mineral Density in Postmenopausal Women. *Journal of Women's Health* **15**, 1141-1150.
28. Fan, J. and Wang, Y. (2007). Multi-scale Jump and Volatility Analysis for High-Frequency Financial Data. *Journal of the American Statistical Association* 102, 1349-1362.
29. Jhaveri, A., Wang, Y., McCarthy, M.B., and Gronowicz, G. A. (2008). Therapeutic Touch Affects DNA Synthesis and Mineralization of Human Osteoblasts In Vitro. To appear in *Journal of Orthopedic Research*.
30. Vitale, R. and Wang, Y. (2008). Wills functionals for Poisson processes. *Statistics and Probability Letter* 78, 2181-2187.
31. Fan, J. and Wang, Y. (2008). Spot volatility estimation for high-frequency data. To appear in the *Statistics and Its Interface*

Articles in Proceedings

1. Wang, Y. (1994). Jump and sharp cusp detection by wavelets with applications to estimation of functions with jumps. *Proceedings of the 26th Symposium on the Interface: Computing Science and Statistics* (vol. 26), John Sall and Ann Lehman (eds.), Fairfax Station, VA: Interface Foundation of North America, Inc, pp. 212-216.

Discussion Papers

1. Wang, Y. (1995). Comment on "Wavelet shrinkage: asymptopia ?" by Donoho, Johnstone, Kerkyacharian, and Picard. *Journal of Royal Statistical Society B.* 57, 344.

Book Review

1. Wang, Y. (2000). Book review of "Wavelets, Approximation, and Statistical Applications" by Härdle, Kerkyacharian, Picard and Tsybakov. *Metrika* 50 270-271.
2. Wang, Y. (2006). Book Review of "Image Processing and Jump Regression Analysis" by Peihua Qiu. *Journal of the American Statistical Association* **101**, 1724.

Preprints

1. Wang, Y. (2005). Variance reduction methods via orthogonal expansion for Monte Carlo integration. Manuscript.
2. Wang, Y. and Xu, H. (2006). Quasi-Monte Carlo method for string interest model. Manuscript.
3. Duan, J., Wang, Y. and Zou, J. (2008). The speed of Option Price Convergence from GARCH to diffusion models. Revised for Journal of Theoretical and Applied Finance.
4. Wang, Y., Yao, Q., Zou, J. and Li, P. (2008). High dimensional volatility modeling and estimation for high-frequency financial data. Manuscript.
5. Wang, Y. and Zou, J. (2008). Large volatility matrix estimation for high-frequency financial data. Manuscript.

Conference Organized

- IMS mini-conference on *Statistics for Mathematical and Computational Finance* at University of Connecticut, May 3, 2003.
- Organizing committee for the Workshop on Frontiers of Statistics, in honor of Professor Peter Bickel, Princeton University, May 18-20, 2006.
- Organizing committee for 2006 ICSA Applied Symposium, University of Connecticut, June 14-17, 2006.

Invited Addresses

1. Invited talk at Department of Statistics, University of Illinois at Urbana-Champaign, March, 1993.
2. "Estimation of Concave and Convex Functions," an invited talk at the Conference on Semi-parametric estimation, Department of Economics, University of California at Berkeley, August 2-13, 1993.
3. Invited talk at Department of Statistics, University of Pennsylvania, November, 1993.
4. Invited talk at Department of Statistics, University of Iowa, January, 1994.
5. "Analysis of Change Points and Long-Range Dependence by Wavelets," an invited discussion of the paper entitled "Wavelet Shrinkage: Asymptopia ?" by Donoho, Johnstone, Kerkyacharian, and Picard at the Royal Statistical Society Meeting, June, 1994.
6. "Change-Point Analysis by Wavelets," an invited talk at the joint IMS (Institute of Mathematical Statistics) and ENAR (Biometric Society) meeting, Birmingham, Alabama, March 26-29, 1995.
7. "Function Estimation via Wavelets for Long-Memory Data", an invited talk at the 1996 Summer Research Conference in Statistics (SRC), sponsored by the Southern Regional Council on Statistics (SRCOS) and ASA, SRCOS/ASA Summer Research

- Conference DeGray Lake Resort State Park, Arkansas. June 9-13, 1996.
8. Invited talk at Department of mathematics, University of South Dakota, March 13, 1997.
 9. Invited talk at Department of Statistics, Kansas State University, March 20, 1997.
 10. “Rough Function Estimation via Wavelets”, an invited talk at NSF Workshop: Bumps, Jumps, Clustering, and Discrimination held at Rice University, May 12-14, 1997.
 11. “Function Estimation via Wavelets for Long-Range Dependent Data”, a presentation in the invited young researcher poster session at Statistics for Correlated Data: a Conference marking the 50th Anniversary of the Department of Statistics at Iowa State University, October 16-18, 1997.
 12. Invited talk at Department of Statistics, University of Wisconsin-Madison, February 9, 1998.
 13. Invited talk at Department of Statistics, Yale University, September 7, 1998.
 14. Invited talk at Department of Mathematical Sciences, Worcester Polytechnic Institute, September 11, 1998.
 15. Invited talk at Department of Statistics, Case Western Reserve University, October 9, 1998.
 16. Invited talk at Department of Mathematics, Boston University, March 18, 1999.
 17. Invited talk at Department of Statistics, Columbia University, October 18, 1999.
 18. Invited talk at University of Windsor, January 21, 2000.
 19. “Function Estimation under Sparse Wavelet Representations”, an invited talk at Conference “Statistics: Reflections on the Past and Visions for the Future” in honor of C. R. Rao, University of San Antonio, March, 2000.
 20. “On asymptotic equivalence of GARCH models and Diffusions”, an invited talk at Conference ICSA 2001 Applied Statistics at Chicago, June 7-9, 2001.
 21. Invited talk at Department of Statistics, University of Pennsylvania, April 24, 2002.
 22. “GARCH and Diffusions”, an invited talk at the 2002 Taipei International Statistical Symposium and Bernoulli Society EAPR Conference, July 7-10, 2002.
 23. “Variance Reduction in Monte Carlo Integration”, invited talk at First Cape Cod Workshop on Monte Carlo Methods, September 13-14, 2002.
 24. “Variance Reduction Methods in Monte Carlo Simulations for Stochastic Differential Equations”, invited talk at SAMSI (Statistical and Applied Mathematical Sciences Institute) Stochastic Computation Research Workshop at Research Triangle Park, North Carolina, September 28-October 1, 2002.
 25. Invited talk at Department of Statistics, Rutgers University, October 16, 2002.
 26. “Wavelets for change points and non-stationary time series”, invited talk at Quality & Productivity Research Conference, IBM, June 23-25, 2003.
 27. Invited talks at Shanghai University of Economics and Finance, November 15-30, 2003.

28. “Statistical inference for GARCH models and Diffusions Based on Option Data”, an invited talk at Oberwolfach Workshop on Financial Statistics, Oberwolfach, Germany, January 10-17, 2004.
29. “Self-similarity and Wavelets”, an invited talk at SAMSI Multiscale Model Development and Control Design Research Workshop at Research Triangle Park, North Carolina, January 17-20, 2004.
30. Invited talk at Department of Operation Research and Financial Engineering, Princeton University, April 20, 2004.
31. “Spot Volatility Analysis for High-Frequency Financial Data”, an invited talk at the 6th ICSA International Conference, Singapore, July 21-23, 2004.
32. “Multiscale Volatility Analysis for High-Frequency Financial Data”, an invited talk at New Inference Concepts for Analyzing Complex Data, Oberwolfach, Germany, November 14-20, 2004.
33. Invited talk at Chinese Academy of Sciences, December, 2004.
34. Invited talk at Beijing University, December, 2004.
35. Invited talk at Department of Statistics, Carnegie Mellon University, March 14, 2005.
36. “Wavelet Realized Volatility”, an invited talk at the 55th Session of the International Statistical Institute (ISI) conference, Sydney, Australia, April 5-12, 2005.
37. Invited talk at Tsinghua University, April, 2005.
38. “Jump and Volatility Analysis for High-Frequency Financial Data”, an invited talk at the Joint Statistical Meetings (JSM), Minneapolis, August 7-11, 2005.
39. Invited talk at Stern Business School, New York University, November 4, 2005.
40. An invited talk at the Workshop on Frontiers of Statistics, in honor of Professor Peter Bickel, Princeton University, May 18-20, 2006.
41. Invited talk at the Graybill Conference 2006: ”Multiscale Methods and Statistics: A Productive Marriage”, Colorado State University, Fort Collins, Colorado, June 11-13, 2006.
42. An invited talk at the workshop “Statistics at the Frontier of Science”, Banff International Research Station, Canada, June 24-29, 2006.
43. An invited talk at 2006 International Symposium on Financial Engineering and Risk Management” at Xiamen University, China, July 5 to 6, 2006.
44. Invited talk at Department of Statistics, Yale University, September 11, 2006.
45. “Wavelets for High-Frequency Finance”, an invited talk at Oberwolfach Workshop on Nonparametric and Semiparametric methods for Econometrics, Oberwolfach, Germany, March 18-24, 2007.
46. Invited talk at Department of Statistics, University of Michigan, April 13, 2007.
47. Invited talk at Department of Mathematics, University of Central Florida, April 20, 2007.
48. Invited talk at International Symposium on Financial Engineering and Risk Management (FERM2007), Beijing, June 11-12, 2007.

49. Invited talk at The 2007 Taipei International Statistical Symposium and ICSA International Conference, Taiwan, June 25-28, 2007.
50. Invited talk at Department of Information and Systems Management, Business School, Hong Kong University of Science and Technology, June 29, 2007.
51. "Heterogeneous Autoregressive Realized Volatility Model", an invited talk at Joint Statistical Meetings, Salt Lake city, July 29-August 2, 2007.
52. An invited talk at International Conference on the Frontiers of Statistics: High Dimensional Data Analysis, Kunming, China, August 13-15, 2007.
53. An invited talk at the Conference on Likelihood Methods in Finance, Princeton University, October 12-13, 2007.
54. Invited Talk at Department of Statistics, University of Chicago, November 2, 2007.
55. Invited Talk at School of Industrial and Systems Engineering, Georgia Institute of Technology, November 13, 2007.
56. Invited Talk at Department of Statistics, North Carolina State University, February 29, 2007.
57. An invited talk at the Tenth Annual Financial Econometrics Conference - The Econometrics of Ultra High Frequency Data in Finance, University of Waterloo, Canada, March 7, 2008.
58. Invited Talk at Department of Statistics, Texas A&M University, April 3, 2008.
59. Invited Talk at Department of Statistics, University of Wisconsin at Madison, April 30, 2008.
60. Invited Talk at Department of Statistics, University of Illinois at Chicago, May 1, 2008.
61. Invited Talk at International Indian Statistical Association (IISA) Conference, UConn-Storrs, May 22-25, 2008.
62. Invited Talk at International Symposium on Financial Engineering and Risk Management 2008 (FERM 2008), Shanghai, China 8-10 June, 2008.
63. Invited Talk at IMS-China International Conference on Statistics and Probability 2008, June 11-13, 2008, Hangzhou, China.
64. Invited Talk and Funding Panel at the Eleventh Meeting of New Researchers in Statistics and Probability University of Colorado, Boulder, CO and NCAR, July 29-August 2, 2008.
65. Invited Talk at Department of Statistics, Carnegie Mellon University, September 8, 2008.
66. Invited Talk at Financial Econometrics and Vast Data Conference, September 15-16, 2008, Oxford-Man Institute of Quantitative Finance, Oxford University, UK.