NICHOLAS G. POLSON

Office Address: Chicago Booth School of Business
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Chicago
IL 60637
(773) 702 9298
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Education: Ph.D., University of Nottingham, 1988

M.A. (OXON), Worcester College, Oxford University, 1984
First Class Honours

Experience: Professor
Chicago Booth School of Business, June 1998-present

Associate Professor
University of Chicago, Graduate School of Business, June 1995-June 1998

Assistant Professor
University of Chicago, Graduate School of Business, July 1991-June 1995

Visiting Assistant Professor
Carnegie Mellon University, August 1989-July 1991

Lecturer
Nottingham University, September 1987-August 1989

Research: Bayes, MCMC, Machine Learning, Deep Learning, Particle Learning, Financial Econometrics

Papers:

"Exceedance as a Measure of Sparsity" (2018) (with P. McCullagh) .

"Gaussian Tail Inflation" (2018) (with P. McCullagh) .

"Deep Learning: A Bayesian Perspective" (2017) (with V. Sokolov). *Bayesian Analysis.*

"Deep Learning in Finance (with Discussion)" (2017) (with J. B. Heaton and J. H. Witte). *Applied Stochastic Models.*

"Deep Learning for Spatio-Temporal Modeling" (2017) (with M. Dixon and V. Sokolov). *Applied Stochastic Models.*

"Deep Learning for Short-term Traffic Flow Prediction" (2017) (with V. Sokolov). *IEEE Transportation Record, C.*

"Bayesian Particle Tracking of Traffic Flows" (2017) (with V. Sokolov). *IEEE Transactions on Intelligent Transportation Systems.*

"Bayesian L0-Regularised Least Squares" (2017) (with L. Sun).

"Prediction Risk for Global-Local Shrinkage Regression" (2017) (with A. Bhadra, J. Datta, Y. Li and B. Willard).

"From Least Squares to Signal Processing and Particle Filtering" (2017) (with N. Singpurwalla and R. Soyer). *Technometrics.*

"Lasso meets Horseshoe" (2017) (with A. Bhadra, J. Datta and B. Willard).

"Why Indexing Works" (2017) (with J. B. Heaton and J. H. Witte). *Applied Stochastic Models.*

"Mixtures, Envelopes, and Hierarchical Duality" (2016) (with J. Scott). *Journal of Royal Statistical Society, B*, 78(4), 701-727.

"Default Bayesian Analysis with Global-Local Shrinkage Priors" (2016) (with A. Bhadra, J. Datta and B. Willard). *Biometrika*, 103(4), 955-969.

"The Horseshoe+ Estimator of Ultra Sparse Signals" (2016) (with A. Bhadra, J. Datta and B. Willard). *Bayesian Analysis.*

"Particle Learning for Fat-tailed Distributions" (2016) (with H. Lopes). *Econometric Reviews*, 35, 1666-1691.

"Simulation-Based Approaches to Stochastic Programming with Decision Dependent Uncertainty" (2016) (with T. Ekin and R. Soyer).

"Global Local Mixtures" (2016) (with A. Bhadra, J. Datta and B. Willard).

"The Market for EPL Odds" (2016) (with G. Feng and J. Xu). *Journal of Quantitative Analysis of Sports*.

"Proximal Algorithms in Statistics and Machine Learning" (2015) (with J. Scott and B. Willard). *Statistical Science*, 30(4), 559-581.

"Bayesian Analysis of Traffic Flow on Interstate I-55: the LWR Model" (2015) (with V. Sokolov). *Annals of Applied Statistics*, 9(4), 1864-1888.

"The Implied Volatility of a Sports Game" (2015) (with H. Stern). *Journal of Quantitative Analysis of Sports*, 11(3), 145-155.

"A Bellman View of Jesse Livermore" (2015) (with J. H. Witte). *Chance*, 28(1), 27-31.

"Sequential Bayesian Learning for Stochastic Volatility with Variance-Gamma Jumps in Returns (with Discussion)" (2015) (with H. Lopes and S. Warty). *Applied Stochastic Models*.

"Augmented Probability Simulation for Accelerated Life Test Design" (2015) (with R. Soyer).

"Sequential Learning, Predictability, and Optimal Portfolio Returns" (2014) (with M. Johannes and A. Korteweg). *Journal of Finance*, 69(2), 611-644.

"The Bayesian Bridge" (2014) (with J. Scott and J. Windle). *Journal of Royal Statistical Society, B*, 76(4), 713-733.

"Augmented MCMC Simulation for 2-stage Stochastic Programs with Recourse" (2014) (with T. Ekin and R. Soyer). *Decision Analysis*, 11(4), 250-264.

"Bayesian Instrumental Variables: Priors and Likelihoods" (2014) (with H. Lopes). *Econometric Reviews*, 33:1-4, 100-121.

"Analyzing Risky Choices: Q-Learning for Deal-No Deal" (2014) (with L. Korsos). *Applied Stochastic Models*, 30(3), 258-270.

"Bayesian Estimation of Nonlinear Equilibrium Models with Random Coefficients" (2014) (with A. Gron and V. Viard). *Applied Stochastic Models*, 31(4), 435-456.

"Bayesian Inference for Logistic Models using Polya-Gamma Latent Variables" (2013). *Journal of American Statistical Association*, 108, 1339-1349.

"Data Augmentation for non-Gaussian Regression Models using Variance-Mean Mixtures" (2013) (with J. Scott). *Biometrika*, 100(2), 459-471.

"Asset Allocation in Finance: A Bayesian Perspective" (2013) (with E. Jacquier). *Hierarchical Models and MCMC* (in Honor of A.F.M. Smith), 501-506.

"Tracking Epidemics with Google Flu Trends and a State Space SEIR Model" (2012) (with V. Dukic and H. Lopes). *Journal of American Statistical Association*, 107, 1410-1426.

"Local Shrinkage rules, Lévy Processes, and Regularized Regression" (2012) (with J. Scott). *Journal of Royal Statistical Society, B*, 74(2), 287-311.

"Good, Great or Lucky? Screening firms with sustained superior perfromance using heavy-tailed priors" (2012) (with J. Scott). *Annals of Applied Statistics*, 6(1), 161-185.

"Simulation-Based Regularized Logistic Regression" (2012) (with R. Gramacy). *Bayesian Analysis*, 7(3), 567-590.

"On the Half-Cauchy prior for a global scale parameter" (2012) (with J. Scott). *Bayesian Analysis*, 7(4), 887-902.

"Optimal Portfolio Choice and Stochastic Volatility" (2012) (with A. Gron and B. Jorgensen). *Applied Stochastic Models*, 28(1), 1-15.

"Bayesian Statistics with a Smile: a Resampling-Sampling Perspective" (2012) (with H. Lopes and C. Carvalho). *Brazilian Journal of Probability and Statistics*, 26(4), 358-371.

"Bayesian Methods in Finance" (2011) (with E. Jacquier). *Handbook of Bayesian Econometrics* (eds H. van Dyk et al), 439-513.

"Data Augmentation for Support Vector Machines" (2011) (with S. Scott). *Invited Paper with Discussion. Bayesian Analysis*, 6, 1-49.

"Dynamic Trees for Learning and Design" (2011) (with R. Gramacy and M. Taddy). *Journal of American Statistical Association*, 106, 109-123.

"Predictive Macro-Finance with Dynamic Partition Models" (2011) (with D. Zantedeschi and P. Damien). *Journal of American Statistical Association*, 106, 427-439.

"Particle Learning of Gaussian Process models for Sequential Design and Optimization" (2011) (with R. Gramacy). *Journal of Computational and Graphical Statistics*, 20(1), 102-118.

"A Simulation-Based approach to Stochastic Dynamic Programming" (2011) (with M. Sorensen). *Applied Stochastic Models*, 27(2), 151-163.

"Shrink Globally, Act Locally: Sparse Bayesian Regularisation and Prediction" (2011) (with J. Scott). (Invited paper with Discussion). *Bayesian Statistics, 9*, 501-539.

"Particle Learning for Sequential Bayesian Computation" (2011) (with C. Carvalho, M. Johannes, H. Lopes). (Invited paper with Discussion). *Bayesian Statistics, 9*, 317-360.

"The Horseshoe Estimator of Sparse Signals" (2010) (with C. Carvalho and J. Scott). *Biometrika*, 97(2), 465-480.

"Particle Learning and Smoothing" (2010) (with C. Carvalho, M. Johannes, H. Lopes). *Statistical Science*, 25, 88-106.

"Particle Learning for General Mixtures" (2010) (with C. Carvalho, H. Lopes, M. Taddy). *Bayesian Analysis*, 5, 709-740.

"Bayesian Computation in Finance" (2010) (with R. McCulloch et al) In: *Frontiers of Bayesian Decision Analysis*, 383-396.

"Simulation-Based Estimation in Portfolio Selection" (2010) (with E. Jacquier) In: *Frontiers of Bayesian Decision Analysis*, 396-410.

"Bayesian Inference for Stochastic Volatility Models" (2010) (with H. Lopes). In: *Risk* (ed. Bocker, K), 515-551.

"MCMC Methods for Financial Econometrics" (2009) (with M. Johannes). *Handbook of Financial Econometrics* (eds Ait-Sahalia and L.P. Hansen), 1-72.

"Optimal Filtering of Jump-Diffusions: Extracting Latent States from Asset Prices" (2009). (with M. Johannes and J. Stroud). *Review of Financial Studies*, 22(7), 2259-2299.

"Particle Filtering" (2009) (with M. Johannes). *Handbook of Financial Statistics* (eds T. Andersen et al), 1015-1028.

"Markov Chain Monte Carlo" (2009) (with M. Johannes). *Handbook of Financial Statistics* (eds T. Andersen et al), 1001-1015.

"Extracting SP500 and Nasdaq Volatility: the Credit Crisis of 2007-2008" (2009) (with H. Lopes). *Handbook of Applied Bayesian Analysis* (eds O'Hagan, A. et al), 319-342.

"Handling Sparsity via the Horseshoe" (2009). (with C. Carvalho and J. Scott). *Journal of Machine Learning Research*, WICP5(AIStats), 5, 73-80.

"Practical Filtering with Sequential Parameter Learning" (2008) (with J. Stroud and P. Mueller). *Journal of Royal Statistical Society, B*, 70, 413-428.

"MCMC Maximum Likelihood for Latent State Models" (2007) (with E. Jacquier and M. Johannes). *Journal of Econometrics*, 137, 615-640.

"Bayesian Analysis of Stochastic Volatility Models with Fat-tails and Correlated Errors" (2004) (with E. Jacquier and P. Rossi). *Journal of Econometrics*, 122, I, 185-212.

"The Impact of Jumps and Volatility in Returns" (2003) (with B. Eraker and M. Johannes) *Journal of Finance*, 58, 3, 1269-1300.

"Bayesian Inference for Derivative Prices" (2003) (with J. Stroud). *Bayesian Statistics, 7*, 641-650.

"Nonlinear State Space Models with State Dependent Variances" (2003) (with P. Mueller and J. Stroud). *Journal of American Statistical Association*, 98, 377-386.

"Practical Filtering for Stochastic Volatility Models" (2003) (with J. Stroud and P. Mueller). In *State Space Models and Unobserved Component Models* (Harvey et al, eds). 236-247.

"Bayesian Analysis of Stochastic Volatility Models" (2002) (with E. Jacquier and P. Rossi). Reprinted. *Journal of Business and Economic Statistics*, 1, 69-87.

"Memoryless Trading" (2000) (with W. Eckhardt). *Journal of Risk Finance*, 4, 1-9.

"Where will Yahoo! Stock be in Five Years?" (2000) (with J. Yasumoto). *Chance*, 13, 25-29.

"A Bayesian Analysis of the Multinomial Probit Model with Fully Identified Parameters" (2000) (with R. McCulloch and P. Rossi). *Journal of Econometrics*, 173-193.

"Bayesian Portfolio Selection: An Analysis of the SP500 index 1970-1996" (2000) (with B. Tew). *Journal of Business and Economic Statistics*, 18, 164-174.

"Investing in Leveraged Index funds" (1999) (with J. Yasumoto). *Journal of Risk Finance, 1, 41-51.*

"Diagnostics for Model Criticism" (1996) (with C. Carota and G. Parmigiani). *Journal of American Statistical Association*, 91, 753-763.

"Convergence of Markov Chain Monte Carlo Algorithms" (1995). (Invited paper with Discussion). *Bayesian Statistics, 5*, 297-321.

"Bayesian Analysis of Stochastic Volatility Models" (1994) (with E. Jacquier and P. Rossi). Invited paper with Discussion. *Journal of Business and Economic Statistics*, 12, 371-417.

"Bayes factors for Discrete Observations for Diffusion Processes" (1994) (with G.O. Roberts). *Biometrika*, 81, 11-26.

"On the Geometric Convergence of the Gibbs Sampler" (1994) (with G.O. Roberts). *Journal of Royal Statistical Society*, B, 377-384.

"Sampling from Log-Concave Distributions" (1994) (with A. Frieze and R. Kannan). *Annals of Applied Probability*, 4, 812-837.

"A Utility Based Approach to Information for Stochastic Differential Equations" (1993) (with G.O. Roberts). *Stochastic Processes and their Applications*, 48, 341-356.

"A Note on the Residual Entropy Function" (1993). (with P. Muliere and G. Parmigiani). *Probability and Engineering Information Science*, 7, 413-420.

"A Bayesian Perspective on the Design of Accelerated Life Tests" (1993). In: *Advances in Reliability* (ed. A. Basu), North-Holland.

"Shannon information and Bayesian Design for Prediction in Accelerated Life Testing" (1993) (with N. Singpurwalla and I. Verdinelli). In: *Reliability and Decision Making* (eds R. Barlow et al), 247-256.

"Bayesian Model Criticism" (1993) (with C. Carota and G. Parmigiani). *Proceedings of the American Statistical Association.*

"On the Expected Amount of Information from a Non-linear Model" (1992). *Journal of Royal Statistical Society*, B, 54, 889-895.

"A Monte Carlo Approach to Non-Normal and Non-Linear State Space Modelling" (1992) (with B.P. Carlin and D.S. Stoffer). *Journal of American Statistical Association*, 87, 493-500.

"Monte Carlo Bayesian Methods for Discrete Regression Models and Categorical Time Series" (1992) (with B. P. Carlin). *Bayesian Statistics, 4*, 577-586.

"Bayesian Design for Random Walk Barriers" (1992) (with G. Parmigiani). *Bayesian Statistics 4*, 715-723.

"An Expected Utility Approach to Influence Diagnostics" (1991) (with B.P. Carlin). *Journal of American Statistical Association*, 86, 1013-1021.

"Inference for Non-Conjugate Bayesian Models using the Gibbs Sampler" (1991) (with B.P. Carlin). *Canadian Journal of Statistics*, 19, 399-405.

"A Bayesian Decision Theoretic Characterisation of Poisson Processes" (1991) (with G.O. Roberts). *Journal of Royal Statistical Society*, B, 53, 675-682.

“A Representation of the Posterior Mean for a Location Model” (1991). *Biometrika*, 78, 426-430.

“The Diagnosis of Breast Carcinoma in Young Women” (1991) (with A. Yelland et al). *British Medical Journal*, 302, 618-620.

“Prior Distributions for the Bivariate Binomial” (1990) (with L.A. Wasserman). *Biometrika*, 77, 901-905.

Articles:

“Are you with the Dumb Money or the Smart Money” (2012) (with J.B. Heaton). *Bloomberg, June 13th*

“An Asset-Pricing Model for the Contagion Age” (2012) (with J. Scott). *Bloomberg, Business Week, Dec. 8th*

“Flu is Waning” (2009) (with V. Dukic and H. Lopes) *Chicago Tribune, Dec. 11th*

“Do Leveraged Funds Deliver Long-Term?” (1998) *Wall Street Journal, Dec. 8th*

Books and Book Reviews

AIQ: How People and Machines are Smarter Together (2017) (with J. Scott). Macmillan.

Bayesian Theory and Applications (2013) (with P. Damien, P. Dellaportas and D. Stephens). Oxford University Press.

Bayesian Computation: MCMC and Particle Filtering (2013) (with M. Johannes). Under contract: Princeton University Press.

Bayesian Inference. (1995) (Edited with G. Tiao). Edward Elgar Publishing.

Review of “Bayesian Statistics: an Introduction” (1990). *Journal of American Statistical Association*, 85, 1167.

Comments

Comment to “Adversarial Risk Analysis” (2011). *Applied Stochastic Models*, 27(2), 89-91.

Comment to “Particle MCMC” (with M. Johannes and S-M. Yae) (2010). *Journal of Royal Statistical Society*, B, 72, 324-326.

Comment to "Computing Normalisation Constants" (2006). *Bayesian Statistics, 8*, 401-403.

Comment to "Iterative and Recursive Estimation in Structural Nonadaptive Models" (with M. Johannes) (2003) *Journal of Business and Economic Statistics*, 493-495.

Comment to "Nonlinear Time Series" by Durbin and Koopman (with E. Jacquier) (2000) *Journal of Royal Statistical Society*, B, 62(1), 44-45.

Comment to "Discussion of Vardi and Lee" (1993) (with G. Roberts). *Journal of Royal Statistical Society*, B, 607-608.

Comment to "Noninformative Priors" (1992). *Bayesian Statistics, 4*, 203-205.

Comment to "Evaluating the accuracy of sampling-based approaches to the calculation of posterior moments" (1992) (with G. Roberts). *Bayesian Statistics, 4*, 190-191

Comment to "Practical Markov Chain Monte Carlo" (1992). *Statistical Science*, 7, 490-491

Comment to "Discussion of Cox and Reid" (1987). *Journal of Royal Statistical Society*, B, 24.

Unpublished Manuscripts:

"A Statistical Theory of Deep Learning via Proximal Splitting" (2015) (with M. Heidari and B. Willard).

"Vertical Likelihood Monte Carlo" (2015) (with J. Scott).

"Sampling Polya-Gamma Random Variates" (2014) (with J. Scott and J. Windle).

"Split Sampling: Expectations, Normalisation and Rare Events" (2013) (with J. Birge and C. Chang).

"Corporate Credit Spreads and Parameter Uncertainty" (2012) (with A. Korteweg).

"Explosive Volatility: A Model of Financial Contagion" (2012) (with J. Scott).

"Optimization via Slice Sampling" (2012) (with J. Birge).

"Smart Money, Dumb Money and Learning Type from Price" (2011) (with J.B. Heaton).

"Maximum Expected Utility via MCMC" (2011) (with E. Jacquier and M. Johannes).

"Default Bayesian Analysis for Multi-way tables: a data augmentation approach" (2012) (with J. Scott).

"Quantile Filtering and Learning" (2011) (with M. Johannes and S-M Yae).

"Nonlinear Filtering and Learning" (2011) (with M. Johannes and S-M Yae).

"Bayesian Nonparametrics with Kingman-Lamperti Processes" (2011) (with J. Scott).

"Alternative Global-Local shrinkage priors using Hypergeometric-Beta mixtures" (2009) (with J. Scott).

"Latent Logistic Allocation: Exact MAP and MCMC in Correlated Topic Models" (2009) (with J. Scott).

"Exact Particle Filtering and Learning" (2007) (with M. Johannes).

"Interacting Particle Systems: Sequential Filtering and Parameter Learning" (2006) (with M. Johannes and J. Stroud).

"Sequential Parameter Estimation in Stochastic Volatility Models with Jumps" (2006) (with M. Johannes and J. Stroud)

"Affine State Dependent Variance Models" (2003) (with P. Mueller and J. Stroud).

"Sequential Optimal Portfolio Allocation: Market and Volatility Timing" (2003) (with M. Johannes and J. Stroud).

"A Multivariate Stein's Lemma for Stochastic Volatility"(2001) (with A. Gron and B. Jorgensen)

"Odds Ratios in MCMC: An Application to Stochastic Volatility Models" (2000) (with E. Jacquier).

"State Dependent Jump Models: How Do U.S. Equity Indicies Jump?" (1998) (with M. Johannes and R. Kumar).

"A Family of Distributions for a Covariance Matrix" (1998)

"The Effect of Low Conductance Sets in MCMC Algorithms" (1998) (with B. Eraker and E. Jacquier)

"Models and Priors for Multivariate Stochastic Volatility" (1995) (with E. Jacquier and P. Rossi)

"Random Polynomial Time Algorithms for Sampling from Joint Distributions" (with D. Applegate and R. Kannan). *Working Paper, 500*, Carnegie Mellon University.

"On Posterior Moment Characterisations in the Exponential family." (1990). *Working Paper, 499*, Carnegie Mellon University.

"A Bayesian Characterisation of the Huber Distribution". *Working Paper*, Carnegie Mellon University.

"Utility Structures for reporting Probability Beliefs" (1988). *Working Paper*, University of Nottingham.

"Bayesian Model Choice: a Decision Theoretic Criterion" (1988). *Working Paper*, University of Nottingham.

Professional Activity:

Savage Thesis Award Committee: 2016-2017
Associate Editor:
Journal of Econometrics (2004-2007)
Journal of Financial Econometrics (2003-2006)
Journal of the American Statistical Association (1999-2002)

Referring: American Statistician, Annals of Statistics
Journal of the Royal Statistical Society, Biometrika
Journal of the American Statistical Association, Journal of Econometrics
Journal of Financial Econometrics

Consulting

Ameritrade; Swiss Re Financial Products; Google

Educational Activity:

Ph.D thesis committee member for Statistics and Finance at
Carnegie Mellon University and University of Chicago

Course development: Introductory courses on Probability and Statistics,
Statistical Inference, Applied Statistics II at Nottingham University

Advanced Statistical Theory, Discrete Multivariate Analysis,
Continuous Multivariate Analysis, an introduction to
Probability and Statistics at Carnegie Mellon University

Business Statistics, Applied Regression Analysis
Probability Theory and Statistical Inference at University of Chicago

Invited Talks:

2018: UC Irvine (CA)
2018: Insper (Sao Paulo)
2018: ISBA (Edinburgh)
2017: OBayes (Austin)
2017: CityU (Hong Kong)
2017: BISP (Milan)
2017: GDRR (Madrid)
2017: London (Finance)
2017: Louis Bachelier (Paris)
2017: Stanford (Engineering)
2017: UT Austin
2016: Wisconsin-Madison
2016: JSM (Chicago)
2016: Bocconi
2016: Chicago (Data Science)
2015: Bocconi
2015: Brazilian Econometrics
2014: CompStat (Geneva)
2014: JSM Meetings (Boston)
2014: Michigan
2014: Purdue
2013: Bayes250 (Duke)
2013: JSM Meetings (Montreal)
2013: Greek Stochastics (Athens)
2013: Rfinance (Switzerland)
2013: UC Santa Cruz
2013: USC (Finance)
2012: Princeton
2012: Bocconi
2011: TTI Chicago
2011: University of Washington (Seattle)
2011: Duke Fuqua
2011: Bayesian Statistics (Turkey)
2011: EDHEC Finance (Nice)
2011: Hierarchical Models and MCMC (Crete)
2011: Decision Theory and Risk (Italy)
2011: Berkeley Finance
2010: Harvard Econometrics
2010: HEC Finance (Paris)

2010: BYU Statistics
2010: Berkeley Finance
2010: George Washington University
2010: Ninth Valencia International Meeting on Bayesian Statistics, Spain
2010: Penn Economics Department
2010: SBIES (Austin)
2010: Bayesian Statistics (Rio)
2010: Google
2009: UT Austin
2009: Santa Fe Institute
2009: George Washington University
2009: Cambridge University(England)
2008: ISBA meetings (Australia)
2008: BYU Finance
2007: JSM Meetings (Denver)
2007: JSM meetings (Salt Lake)
2007: Financial Econometrics (Montreal)
2006: JSM Meetings (Seattle)
2006: ISBA meetings (Rio)
2006: Bocconi University
2006: Colorado University (Finance)
2006: Eighth Valencia International Meeting on Bayesian Statistics, Spain
2005: JSM Meetings (Minneapolis)
2004: JSM Meetings (Toronto)
2004: McGill University (Montreal)
2004: BYU (Statistics, Finance)
2003: JSM Meetings (San Francisco)
2003: Volatility Conference (Florence)
2003: Financial Econometrics (Montreal)
2002: JSM meetings (New York)
2002: Duke University Economics Department
2002: MD Anderson Center
2002: Montreal University
2002: Rice University
2002: Seventh Valencia International Meeting on Bayesian Statistics, Spain
2001: Princeton Financial Econometrics
2001: ASA meetings (Atlanta)
2000: Chicago Business School
1999: Wharton Business School
1999: Chicago Economics Department
1999: Virginia Economics Department
1999: Fuqua Finance Department
1999: Ohio State Business School

1999: ASA meetings (Baltimore)
1998: JBES invited paper (ASA meetings, Dallas)
1998: Sixth Valencia International Meeting on Bayesian Statistics, Spain
1998: Washington University at St. Louis
1997: Carnegie Mellon University
1997: Harvard Economics Department
1997: Michigan Business School
1996: USC Business School
1995: Duke University
1995: Toronto University
1994: Fifth Valencia International meeting on Bayesian Statistics, Spain
1994: ASA meetings (Toronto)
1993: Duke University
1992: ASA meetings (Boston)
1992: NBER meetings (Duke)
1992: Fifth Decision Theory conference, Purdue University
1992: Northwestern University
1992: Purdue University
1991: Workshop on Stochastic Simulation (Ohio University)
1991: University of Chicago
1991: Purdue University
1991: Minnesota University
1991: Fourth Valencia International meeting on Bayesian Statistics, Spain
1991: International Conference on reliability, Missouri
1990: Purdue University
1990: Duke University
1989: Nottingham University
1987: Southampton University