

## Publications & Invited Talks (Michael C. Fu, January 2009)

### Articles in Refereed Journals

1. M.C. Fu, "On the Consistency of Second Derivative Perturbation Analysis Estimators for the M/G/1 Queue," *Applied Mathematics Letters*, Vol.2, No.2, 193–197, 1989.
2. M.C. Fu, "Convergence of a Stochastic Approximation Algorithm for the GI/G/1 Queue Using Infinitesimal Perturbation Analysis," *Journal of Optimization Theory and Applications*, Vol.65, No.1, 149–160, 1990.
3. M.C. Fu and J.Q. Hu, "Consistency of Infinitesimal Perturbation Analysis for the GI/G/m Queue," *European Journal of Operational Research*, Vol.54, No.1, 121–139, 1991.
4. M.C. Fu and J.Q. Hu, "On Choosing the Characterization for Smoothed Perturbation Analysis," *IEEE Transactions on Automatic Control*, Vol.36, No.11, 1331–1336, 1991.
5. M.C. Fu, J.Q. Hu and R. Nagi, "Bias Properties of Infinitesimal Perturbation Analysis for Systems with Parallel Servers," *Computers & Operations Research*, Vol.19, No.5, 409–423, 1992.
6. M.C. Fu and J.Q. Hu, "Extensions and Generalizations of Smoothed Perturbation Analysis in a Generalized Semi-Markov Process Framework," *IEEE Transactions on Automatic Control*, Vol.37, No.10, 1483–1500, 1992.
7. J. Michaels, J.E. Brennan, B. Golden, and M.C. Fu, "A Simulation Study of Donor Scheduling Systems for the American Red Cross," *Computers & Operations Research*, Vol.20, No.2, 199–213, 1993.
8. M.C. Fu and J.Q. Hu, "Second Derivative Sample Path Estimators for the GI/G/m Queue," *Management Science*, Vol.39, No.3, 359–383, 1993.
9. M.C. Fu and J.Q. Hu, "Sample Path Properties of the G/D/m Queue," *European Journal of Operational Research*, Vol.65, No.2, 270–273, 1993.
10. M.C. Fu and J.Q. Hu, "Smoothed Perturbation Analysis for Queues with Finite Buffers," *Queueing Systems: Theory and Applications*, Vol.14, 57–78, 1993.
11. M.C. Fu, "Sample Path Derivatives for (s,S) Inventory Systems," *Operations Research*, Vol.42, No.2, 351–364, 1994.
12. M.C. Fu, "Optimization via Simulation: A Review," *Annals of Operations Research*, Vol.53, 199–248, 1994.
13. S. Bashyam and M.C. Fu, "Application of Perturbation Analysis to a Class of Periodic Review (s,S) Inventory Systems," *Naval Research Logistics*, Vol.41, No.1, 47–80, 1994.
14. M.C. Fu and J.Q. Hu, "Smoothed Perturbation Analysis Derivative Estimation for Markov Chains," *Operations Research Letters*, Vol.15, No.5, 241–251, 1994.
15. M.C. Fu and J.Q. Hu, "(s,S) Inventory Systems with Random Lead Times: Harris Recurrence and Its Implications in Sensitivity Analysis," *Probability in the Engineering and Informational Sciences*, Vol.8, No.3, 355–376, 1994.

16. M.C. Fu and J.Q. Hu, "On Unbounded Hazard Rates for Smoothed Perturbation Analysis," *Journal of Applied Probability*, Vol.32, No.3, 659–667, 1995.
17. M.C. Fu, J.Q. Hu and R. Nagi, "Gradient Estimation for Queues with Non-identical Servers," *Computers & Operations Research*, Vol.22, No.7, 715–729, 1995.
18. M.C. Fu and J.Q. Hu, "Sensitivity Analysis for Monte Carlo Simulation of Option Pricing," *Probability in the Engineering and Informational Sciences*, Vol.9, No.3, 417–446, 1995.
19. M.C. Fu and J.Q. Hu, "Addendum to 'Extensions and Generalizations of Smoothed Perturbation Analysis in a Generalized Semi-Markov Process Framework'," *IEEE Transactions on Automatic Control*, Vol.40, No.7, 1286–1287, 1995.
20. M.C. Fu and J.Q. Hu, "On the Relationship of Capacitated Production/Inventory Models to Manufacturing Flow Control Models," *Operations Research Letters*, Vol.18, No.1, 15–24, 1995.
21. M.C. Fu and B.K. Kaku, "Minimizing Work-in-Process and Material Handling in the Facilities Layout Problem," *IIE Transactions*, Vol.29, No.1, 29–36, 1997.
22. M.C. Fu and K.J. Healy, "Techniques for Simulation Optimization: An Experimental Study on an (s,S) Inventory System," *IIE Transactions*, Vol.29, No.3, 191–199, 1997.
23. M.C. Fu and S.D. Hill, "Optimization of Discrete Event Systems via Simultaneous Perturbation Stochastic Approximation," *IIE Transactions*, Vol.29, No.3, 233–243, 1997  
(received 1998 IIE Transactions on Operations Engineering Best Paper Award).
24. A. Díaz and M.C. Fu, "Models for Multi-Echelon Repairable Item Inventory Systems with Limited Repair Capacity," *European Journal of Operational Research*, Vol.97, No.3, 480–492, 1997.
25. M.C. Fu, J.W. Herrmann, and M. Narayanaswamy, "Setting Thresholds for Periodic Order Release," *Journal of Intelligent Manufacturing*, Vol.8, No.5, 369–383, 1997.
26. S. Bashyam and M.C. Fu, "Optimization of (s,S) Inventory Systems with Random Lead Times and a Service Level Constraint," *Management Science*, Vol.44, No.12, S243–S256, 1998.
27. M.C. Fu and J.Q. Hu, "Efficient Design and Sensitivity Analysis of Control Charts Using Monte Carlo Simulation," *Management Science*, Vol.45, No.3, 395–413, 1999.
28. X.R. Cao, M.C. Fu, and J.Q. Hu, "On Performance Potentials and Conditional Monte Carlo for Gradient Estimation for Markov Chains," *Annals of Operations Research*, Vol.87, 263–272, 1999.
29. M.C. Fu, D.B. Madan and T. Wang, "Pricing Continuous Asian Options: A Comparison of Monte Carlo and Laplace Transform Inversion Methods," *Journal of Computational Finance*, Vol.2, No.2, 49–74, 1999.
30. S. Bashyam, M.C. Fu, and B.K. Kaku, "Application of Perturbation Analysis to Multiproduct Capacitated Production-Inventory Control," *International Journal on Operations and Quantitative Management*, Vol.5, No.2, 109–120, 1999.
31. M.K. Govil and M.C. Fu, "Queueing Theory in Manufacturing: A Review," *Journal of Manufacturing Systems*, Vol.18, No.3, 214–240, 1999.

32. M.C. Fu, S.I. Marcus, and I.J. Wang, "Monotone Optimal Policies for a Transient Queueing Staffing Problem," *Operations Research*, Vol.48, No.2, 327–331, 2000.
33. M.C. Fu, R. Wu, G. Gürkan, and A.Y. Demir, "A Note on Perturbation Analysis Estimators for American-Style Options," *Probability in the Engineering and Informational Sciences*, Vol.14, No.3, 385–392, 2000.
34. S. Bhatnagar, M.C. Fu, S.I. Marcus, and S. Bhatnagar, "Two Timescale Algorithms for Simulation Optimization of Hidden Markov Models," *IIE Transactions*, Vol.33, No.3, 245–258, 2001.
35. M.C. Fu, S.B. Laprise, D.B. Madan, Y. Su, and R. Wu, "Pricing American Options: A Comparison of Monte Carlo Simulation Approaches," *Journal of Computational Finance*, Vol.4, No.3, 39–88, Spring 2001.
36. S. Bhatnagar, M.C. Fu, S.I. Marcus, and P.J.M. Fard, "An Optimal Structured Feedback Policy for ABR Flow Control Using Two Timescale SPSA," *IEEE/ACM Transactions on Networking*, Vol.9, No.4, 479–491, 2001.
37. M.C. Fu and X. Jin, "On the Convergence Rate of Ordinal Comparison of Random Variables," *IEEE Transactions on Automatic Control*, Vol.46, No.12, 1950–1954, 2001.
38. X.-R. Cao, Z. Ren, S. Bhatnagar, M.C. Fu, and S.I. Marcus, "A Time Aggregation Approach to Markov Decision Processes," *Automatica*, Vol.38, No.6, 929–943, 2002.
39. M.C. Fu, "Optimization for Simulation: Theory vs. Practice" (Feature Article), *INFORMS Journal on Computing*, Vol.14, No.3, 192–215, 2002.
40. M.C. Fu, "Simulation Optimization: Evolution or Revolution?" *INFORMS Journal on Computing*, Vol.14, No.3, 226–227, 2002.
41. Y. Su and M.C. Fu, "Optimal Importance Sampling in Securities Pricing," *Journal of Computational Finance*, Vol.5, No.4, 27–50, 2002.
42. K. Xu, P.T. Evers, and M.C. Fu, "A Multi-Location Continuous Review (Q,R) Inventory Model with Emergency Transshipments," *European Journal of Operational Research*, Vol.145, No.3, 569–584, 2002.
43. M.C. Fu and X. Xie, "Derivative Estimation for Buffer Capacity of Continuous Transfer Lines Subject to Operation-dependent Failures," *Discrete Event Dynamic Systems*, Volume 12, No.4, 447–469, 2002.
44. R. Wu and M.C. Fu, "Optimal Exercise Policies and Simulation-based Valuation for American-Asian Options," *Operations Research*, Vol.51, No.1, 2003, 52–66.
45. S. Bhatnagar, M.C. Fu, S.I. Marcus, and I.J. Wang, "Two-Timescale Simultaneous Perturbation Stochastic Approximation Using Deterministic Perturbation Sequences," *ACM Transactions on Modeling and Computer Simulation*, Vol.13, No.2, 180–209, 2003.
46. X. Jin, M.C. Fu, and X. Xiong, "Probabilistic Error Bounds for Simulation Quantile Estimation," *Management Science*, Vol.49, No.2, 230–246, 2003.
47. Y. He, M.C. Fu, and S.I. Marcus, "Convergence of Simultaneous Perturbation Stochastic Approximation for Nondifferentiable Optimization," *IEEE Transactions on Automatic Control*, Vol.48, No.8, 1459–1463, 2003.

48. X. Yao, M.C. Fu, S.I. Marcus, and E. Fernández-Gaucherand, "Optimal Preventive Maintenance Scheduling in Semiconductor Manufacturing," *IEEE Transactions on Semiconductor Manufacturing*, Vol.17, No.3, 345–356, 2004.
49. H.S. Chang, M.C. Fu, J. Hu, and S.I. Marcus, "An Adaptive Sampling Algorithm for Solving Markov Decision Processes," *Operations Research*, Vol.53, No.1, 126–139, 2005.
50. M.C. Fu, J.Q. Hu, C.H. Chen, and X. Xiong, "Simulation Allocation for Determining the Best Design in the Presence of Correlated Sampling," *INFORMS Journal on Computing*, accepted for publication in 2005.
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52. H.S. Chang, H.-G. Lee, M.C. Fu, and S.I. Marcus, "Evolutionary Policy Iteration for Solving Markov Decision Processes," *IEEE Transactions on Automatic Control*, Vol.50, No.11, 1804–1808, 2005.
53. X. Yao, X. Xie, M.C. Fu, and S.I. Marcus, "Optimal Joint Preventive Maintenance and Production Policies," *Naval Research Logistics*, Vol.52, No.7, 668–681, 2005.
54. S.B. Laprise, M.C. Fu, S.I. Marcus, A.E.B. Lim, and H. Zhang, "Pricing American-Style Derivatives with European Call Options," *Management Science*, Vol.52, No.1, 95–110, 2006.
55. C.H. Chen, D. He, and M.C. Fu, "Efficient Dynamic Simulation Allocation in Ordinal Optimization," *IEEE Transactions on Automatic Control*, Vol.51, No.12, 2005–2009, 2006.
56. H.S. Chang, M.C. Fu, J. Hu, and S.I. Marcus, "An Asymptotically Efficient Simulation-Based Algorithm for Finite Horizon Stochastic Dynamic Programming," *IEEE Transactions on Automatic Control*, Vol.52, No.1, 89–94, 2007.
57. M.C. Fu, J.Q. Hu, C.H. Chen, and X. Xiong, "Simulation Allocation for Determining the Best Design in the Presence of Correlated Sampling," *INFORMS Journal on Computing*, Vol.19, No.1, 101–111, 2007.
58. J. Hu, M.C. Fu, and S.I. Marcus, "A Model Reference Adaptive Search Method for Global Optimization," *Operations Research*, Vol.55, No.3, 549–568, 2007.
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60. H.S. Chang, M.C. Fu, J. Hu, and S.I. Marcus, "Recursive Learning Automata Approach to Markov Decision Processes," *IEEE Transactions on Automatic Control*, Vol.52, No.7, 1249–1255, 2007.
61. H.S. Chang, M.C. Fu, J. Hu, and S.I. Marcus, "A Survey of Some Simulation-Based Algorithms for Markov Decision Processes," *Communications in Information and Systems*, Vol.7, No.1, 59–92, 2007.
62. C.H. Chen, D. He, M.C. Fu, and L.H. Lee, "Efficient Simulation Budget Allocation for Selecting an Optimal Subset," *INFORMS Journal on Computing*, Vol.20, No.4, 579–595, 2008.

63. M.C. Fu, “What You Should Know About Simulation and Derivatives” (Cover Story), *Naval Research Logistics*, Vol.55, No.8, 723–736, 2008.
64. J. Hu, M.C. Fu, and S.I. Marcus, “A Model Reference Adaptive Search Method for Stochastic Global Optimization,” *Communications in Information and Systems*, Vol.8, No.3, 245–276, 2008.
65. M.C. Fu, S. Lele, and T. Vossen, “Conditional Monte Carlo Gradient Estimation in Economic Design of Control Limits,” *Production & Operations Management*, forthcoming, 2009.
66. E. Zhou, M.C. Fu, and S.I. Marcus, “Solving Continuous-State POMDPs via Density Projection,” *IEEE Transactions on Automatic Control*, forthcoming, 2009.

## Books

- M.C. Fu and J.Q. Hu, *Conditional Monte Carlo: Gradient Estimation and Optimization Applications*, Kluwer Academic Publishers, 1997 (research monograph: 416 pages; received 1998 INFORMS College on Simulation Outstanding Publication Award).
- H.S. Chang, M.C. Fu, J. Hu, and S.I. Marcus, *Simulation-Based Algorithms for Markov Decision Processes*, Springer, March 2007 (research monograph).

## Books Edited

- F.B. Alt, M.C. Fu and B.L. Golden, editors, *Perspectives in Operations Research: Papers in Honor of Saul Gass’ 80th Birthday*, Springer, 2006.
- M.C. Fu, R.A. Jarrow, J.-Y. Yen, and R.J. Elliott, editors, *Advances in Mathematical Finance* (Festschrift in honor of Dilip Madan’s 60th birthday), Birkhäuser, April 2007.
- S.I. Gass and M.C. Fu, editors, *Encyclopedia of Operations Research and Management Science*, 3rd edition, Springer, in preparation.

## Book Chapters

1. S. Bhatnagar, M.C. Fu, and S.I. Marcus, “Two Timescale SPSA Algorithms for Rate-Based ABR Flow Control,” *System Theory: Modeling, Analysis, and Control*, T. Djaferis and I. Schick, editors, Kluwer Academic Publishers, 367–378, 1999.
2. Y. He, M.C. Fu, and S.I. Marcus, “A Simulation-Based Policy Iteration Algorithm for Average Cost Unichain Markov Decision Processes,” *Computing Tools for Modeling, Optimization, and Simulation: Interfaces in Computer Science and Operations Research*, Manuel Laguna and José Luis González Velarde, editors, Kluwer Academic Publishers, 161–182, 2000.
3. M.C. Fu, “Perturbation Analysis,” *Encyclopedia of Operations Research and Management Science*, 2nd edition, S.I. Gass and C.M. Harris, eds., Kluwer Academic Publishers, 608–611, 2001.

4. M.C. Fu, "Simulation Optimization," *Encyclopedia of Operations Research and Management Science*, 2nd edition, S.I. Gass and C.M. Harris, eds., Kluwer Academic Publishers, 756–759, 2001.
5. H. Zhang and M.C. Fu, "Sample Path Derivatives for  $(s, S)$  Inventory Systems with Price Determination," *The Next Wave in Computing, Optimization, and Decision Technologies*, Bruce L. Golden, S. Raghavan, Edward A. Wasil, editors, Kluwer Academic Publishers, 229–246, 2005.
6. M.C. Fu, "Gradient Estimation," Chapter 19 in *Handbooks in Operations Research and Management Science: Simulation*, S.G. Henderson and B.L. Nelson, eds., Elsevier, 575–616, 2006.
7. M.C. Fu, "Sensitivity Analysis for Simulation of Stochastic Activity Networks," *Perspectives in Operations Research: Papers in Honor of Saul Gass' 80th Birthday*, F.B. Alt, M.C. Fu and B.L. Golden, editors, Springer, 351–366, 2006.
8. M.C. Fu, "Variance-Gamma and Monte Carlo," *Advances in Mathematical Finance*, M.C. Fu, R.A. Jarrow, J.-Y. Yen, and R.J. Elliott, editors, Birkhäuser, 2007.
9. C.H. Chen, M.C. Fu, and L. Shi, "Simulation and Optimization," *Tutorials in Operations Research*, Z.L. Chen and S. Raghavan, editors, INFORMS, 247–260, 2008.

### Papers in Conference Proceedings (Refereed or Invited)

1. M.C. Fu and Y.C. Ho, "Using Perturbation Analysis for Gradient Estimation, Averaging, and Updating in a Stochastic Approximation Algorithm," *Proceedings of the 1988 Winter Simulation Conference*, 509–517, 1988.
2. M.C. Fu and J.Q. Hu, "Bias Properties of Infinitesimal Perturbation Analysis for Multi-Server Queues," *Proceedings of the 1990 Winter Simulation Conference*, 377–381, 1990.
3. M.C. Fu and J.Q. Hu, "Variance Properties of Second Derivative Perturbation Analysis Estimators for Single-Server Queues," *Proceedings of the American Control Conference*, 1040–1041, 1990.
4. S. Bandyopadhyay and M.C. Fu, "Application of Perturbation Analysis to  $(s, S)$  Inventory Systems," *Proceedings of the 1991 Winter Simulation Conference*, 994–1003, 1991.
5. M.C. Fu and K.J. Healy, "Simulation Optimization of  $(s, S)$  Inventory Systems," *Proceedings of the 1992 Winter Simulation Conference*, 506–514, 1992.
6. M.C. Fu, J.Q. Hu and L. Shi, "Likelihood Ratio Methods via Conditional Monte Carlo and Splitting," *Proceedings of the Allerton Conference on Communication, Computing and Control*, 958–967, 1993.
7. M.C. Fu, J.Q. Hu and L. Shi, "An Application of Perturbation Analysis to Replacement Problems in Maintenance," *Proceedings of the 1993 Winter Simulation Conference*, 329–337, 1993.
8. M.C. Fu, "A Tutorial Overview of Optimization via Discrete-Event Simulation," *Proceedings of the 11th Conference on Analysis and Optimization of Systems: Discrete Event Systems*, 409–418, 1994 (invited talk).

9. S.D. Hill and M.C. Fu, "Simulation Optimization via Simultaneous Perturbation Stochastic Approximation," *Proceedings of the 1994 Winter Simulation Conference*, 1461–1464, 1994.
10. M.C. Fu, "A Tutorial Review of Techniques for Simulation Optimization," *Proceedings of the 1994 Winter Simulation Conference*, 149–156, 1994.
11. S.D. Hill and M.C. Fu, "Optimizing Discrete Event Systems with the Simultaneous Perturbation Stochastic Approximation Algorithm," *Proceedings of the 33rd IEEE Conference on Decision and Control*, 2631–2632, 1994.
12. M.C. Fu, "Pricing of Financial Derivatives via Simulation," *Proceedings of the 1995 Winter Simulation Conference*, 126–132, 1995.
13. S.D. Hill and M.C. Fu, "Transfer Optimization via Simultaneous Perturbation Stochastic Approximation," *Proceedings of the 1995 Winter Simulation Conference*, 242–249, 1995.
14. S. Bashyam, M.C. Fu, and B.K. Kaku, "Application of Perturbation Analysis to Multiproduct Capacitated Production-Inventory Control," *Proceedings of the American Control Conference*, 1270–1274, 1995.
15. A. Díaz and M.C. Fu, "Towards a Practical Taxonomy of Inventory Systems," *Manufacturing Strategy: Operations Strategy in a Global Context; Proceedings of the 3rd International Conference of the European Operations Management Association*, C.A. Voss (editor), London Business School, 195–200, 1996.
16. M.C. Fu, "On Maximal Coupling Perturbation Analysis," *Proceedings of the 2nd St. Petersburg Workshop on Simulation*, 143–151, 1996 (invited talk).
17. M.C. Fu and J.Q. Hu, "On Perturbation Propagation for Smoothed Perturbation Analysis," *Proceedings of the IFAC 13th Triennial World Congress*, 365–369, 1996.
18. M.C. Fu and J.Q. Hu, "A Comparison of Perturbation Analysis Techniques," *Proceedings of the 1996 Winter Simulation Conference*, 295–301, 1996.
19. M.C. Fu and X. Xie, "Perturbation Analysis of Two-Stage Continuous Transfer Lines Subject to Operation-Dependent Failures," *Proceedings of the 37th IEEE Conference on Decision and Control*, 1698–1703, 1998.
20. J.W. Fowler, M.C. Fu, L.W. Schruben, S. Brown, F. Chance, S. Cunningham, C. Hilton, M. Janakiram, R. Stafford, J. Hutchby, "Operational Modeling & Simulation in Semiconductor Manufacturing," *Proceedings of the 1998 Winter Simulation Conference*, 1035–1040, 1998.
21. S. Bhatnagar, M.C. Fu, S.I. Marcus, and Y. He, "Markov Decision Processes for Semiconductor Fab-Level Decision Making," *Proceedings of the IFAC 14th Triennial World Congress*, 145–150, 1999.
22. S. Bhatnagar, M.C. Fu, and S.I. Marcus, "Rate-Based ABR Flow Control using Two Timescale SPSA," *Proceedings of the SPIE Technical Symposium: Performance and Control of Network Systems III*, 142–149, 1999.
23. S. Bhatnagar, M.C. Fu, S.I. Marcus, Emmanuel Fernández-Gaucherand, and Y. He, "A Markov Decision Process Model for Capacity Expansion and Allocation," *Proceedings of the 38th IEEE Conference on Decision and Control*, 1380–1385, 1999.

24. M.C. Fu, S. Andradóttir, J.S. Carson, F. Glover, C.R. Harrell, Y.C. Ho, J.P. Kelly, and S.M. Robinson, "Integrating Optimization and Simulation: Research and Practice," *Proceedings of the 2000 Winter Simulation Conference*, 610–616.
25. Y. Su and M.C. Fu, "Importance Sampling in Derivative Securities Pricing," *Proceedings of the 2000 Winter Simulation Conference*, 587–596.
26. X. Yao, M.C. Fu, S.I. Marcus, and E. Fernandez-Gaucherand, "Optimization of Preventive Maintenance Scheduling for Semiconductor Manufacturing Systems: Models and Implementation," *Proceedings of the 2001 IEEE Conference on Control Applications*, 407–411.
27. S.B. Laprise, M.C. Fu, S.I. Marcus, and A.E.B. Lim, "A New Approach to Pricing American-Style Derivatives," *Proceedings of the 2001 Winter Simulation Conference*, 329–337.
28. M.C. Fu, "Simulation Optimization," *Proceedings of the 2001 Winter Simulation Conference*, 53–61.
29. X. Xiong, I.J. Wang, and M.C. Fu, "Randomized-Direction Stochastic Approximation Algorithms Using Deterministic Perturbation Sequences," *Proceedings of the 2002 Winter Simulation Conference*, 285–291.
30. J. Chen and M.C. Fu, "Hedging Beyond Duration and Convexity," *Proceedings of the 2002 Winter Simulation Conference*, 1593–1599.
31. M.C. Fu, "Optimization for Discrete-Event Simulation: Theory and Practice" *Proceedings of Asian Simulation Conference/ 5th International Conference on System Simulation and Scientific Computing*, 2002.
32. X. Yao, X. Xie, M. Fu, S. Marcus and E. Fernandez-Gaucherand, "Optimal Preventive Maintenance Policies for Unreliable Queueing/Production Systems with Applications to Semiconductor Manufacturing Fabs," TECHCON, Dallas, TX, Aug. 25–27, 2003 (awarded "Best Paper in Session").
33. V. Osidach and M.C. Fu, "Computer Simulation Of A Mobile Examination Center," *Proceedings of the 2003 Winter Simulation Conference*, 1868–75.
34. A.D. Ridley, M.C. Fu, and W.A. Massey, "Fluid Approximations for a Priority Call Center with Time-Varying Arrivals," *Proceedings of the 2003 Winter Simulation Conference*, 1817–23.
35. H.S. Chang, M.C. Fu, and S.I. Marcus, "An Asymptotically Efficient Algorithm for Finite Horizon Stochastic Dynamic Programming Problems," *Proceedings of the 42nd IEEE Conference on Decision and Control*, 2003, 3818–3823.
36. H.S. Chang and M.C. Fu, "A Distributed Algorithm for Solving a Class of Multi-agent Markov Decision Processes," *Proceedings of the 42nd IEEE Conference on Decision and Control*, 2003, 5341–5346.
37. W.C. Howell and M.C. Fu, "Application of Perturbation Analysis to Traffic Light Signal Timing," *Proceedings of the 42nd IEEE Conference on Decision and Control*, 2003, 4837–4840.
38. C.-H. Chen, D. He, and M.C. Fu, "A Case Study for Optimal Dynamic Simulation Allocation in Optimal Optimization," *Proceedings of the American Conference on Control*, 5754–5759, 2004.

39. M.C. Fu, J.Q. Hu, C.H. Chen, and X. Xiong, "Optimal Computing Budget Allocation Under Correlated Sampling," *Proceedings of the 2004 Winter Simulation Conference*, 595–603.
40. V.R. Ramezani, S.I. Marcus, and M.C. Fu, "Risk and Information in the Estimation of Hidden Markov Models," *Proceedings of the 2004 Winter Simulation Conference*, 1596–1601.
41. V.R. Ramezani, S.I. Marcus, and M.C. Fu, "Structured Risk-Sensitivity for Partially Observed Markov Chains," *Proceedings of the 43rd IEEE Conference on Decision and Control*, 3473–3478, 2004.
42. H.S. Chang and M.C. Fu, "Localization for a Class of Two-Team Zero-Sum Markov Games," *Proceedings of the 43rd IEEE Conference on Decision and Control*, 4844–4849, 2004.
43. M. Chen, J.Q. Hu, and M.C. Fu, "Fluid Approximation and Perturbation Analysis of a Dynamic Priority Call Center," *Proceedings of the 43rd IEEE Conference on Decision and Control*, 23042309, 2004.
44. C. Panayiotou, W.C. Howell, and M.C. Fu, "Online Traffic Light Control Through Gradient Estimation Using Stochastic Fluid Models," *Proceedings of the IFAC 16th Triennial World Congress*, 2005.
45. M.C. Fu, F.W. Glover, and J. April, "Simulation Optimization: A Review, New Developments, and Applications," *Proceedings of the 2005 Winter Simulation Conference*, 83–95.
46. J. Hu, M.C. Fu, and S.I. Marcus, "Simulation Optimization using Model Reference Adaptive Search," *Proceedings of the 2005 Winter Simulation Conference*, 811–18.
47. R.L. Bennett, M.C. Fu, R. Jarrow, D.A. Nuxoll, and H. Zhang, "A Loss Default Simulation Model of the Federal Bank Deposit Insurance Funds," *Proceedings of the 2005 Winter Simulation Conference*, 1835–43.
48. H.S. Chang, M.C. Fu, and S.I. Marcus, "A Recursive Learning Automata for Control of Partially Observable Markov Decision Processes," *Proceedings of the 44th IEEE Conference on Decision and Control*, 6091–6096, 2005.
49. Y. He, M.C. Fu, and S.I. Marcus, "A Two-Timescale Stochastic Approximation Algorithm for Weighted Cost-to-Go Markov Decision Processes," *Proceedings of the 44th IEEE Conference on Decision and Control*, 8022–8027, 2005.
50. M.C. Fu, "Sensitivity Analysis for Stochastic Activity Networks," *Proceedings of the International Conference on Automatic Control and Systems Engineering*, CD-ROM, 2005.
51. M.C. Fu, J. Hu, and S.I. Marcus, "Model-Based Randomized Methods for Global Optimization," *Proceedings of the 17th International Symposium on Mathematical Theory of Networks and Systems*, CD-ROM, 2006.
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53. H.S. Chang, M.C. Fu, and S.I. Marcus, "Adversarial Multi-Armed Bandit Approach to Stochastic Optimization," *Proceedings of the 45th IEEE Conference on Decision and Control*, 5681–5686, 2006.

54. M.C. Fu and W.C. Howell, "Traffic Light Signal Optimization via Simulation," Proceedings of the International Modeling & Simulation Multiconference, 241–246, 2007.
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56. J. Hu, M.C. Fu, and S.I. Marcus, "A Model Reference Adaptive Search Method for Stochastic Optimization with Applications to Markov Decision Processes," *Proceedings of the 46th IEEE Conference on Decision and Control*, 975–980, 2007.
57. E. Zhou, M.C. Fu, and S.I. Marcus, "A Particle Filter Framework for Randomized Optimization Algorithms," *Proceedings of the Winter Simulation Conference*, 647–654, 2008.
58. M.C. Fu, C.H. Chen, and L. Shi, "Some Topics in Simulation Optimization," *Proceedings of the Winter Simulation Conference*, 27–38, 2008.
59. E. Zhou, M.C. Fu, and S.I. Marcus, "A Density Projection Approach to Dimension Reduction for Continuous-State POMDPs," *47th IEEE Conference on Decision and Control*, 5576–5581, 2008.

## Other Papers

1. A.D. Ridley, W. Massey, and M.C. Fu, "Fluid Approximation of a Priority Call Center with Time-Varying Arrivals," *The Telecommunications Review*, Volume 15, 69–77, 2004.
2. M.C. Fu and R.K. Gupta, "Device and Circuit Modeling for a 3.5- to 6.5-GHz GaAs Monolithic Dual-Gate FET Switch Module," *Comsat Technical Review*, Spring 1989, 123–144.
3. R.K. Gupta, J.H. Reynolds, M.C. Fu and T. Heikkila, "Design and Modeling of a GaAs Monolithic 2- to 6-GHz Feedback Amplifier," *Comsat Technical Review*, Spring 1987, 1–22.
4. R. Gupta, M. Fu, W. Baker, and R. Edwards, "A Broadband MMIC Dual-Gate FET Switch Module with On-Chip TTL Control Interface," *1987 European Microwave Conference Proceedings*, 243–248.

## Working Papers

- H.S. Chang, J. Hu, M.C. Fu, and S.I. Marcus, "Adaptive Adversarial Multi-Armed Bandit Approach to Two-Person Zero-Sum Markov Games", *IEEE Transactions on Automatic Control*, under review, 2009.
- A.O. Hall and M.C. Fu, "Optimal Army Officer Retirement," *Operations Research*, under review, 2008.
- M.C. Fu, L.J. Hong and J.Q. Hu, "Conditional Monte Carlo Estimation of Quantile Sensitivities," *Management Science*, under review, 2008.
- J. Hu, M.C. Fu, and S.I. Marcus, "Dynamic Sample Allocation in Model-based Optimization," *Journal of Global Optimization*, under review, 2009.

- J.W. Heath, M.C. Fu, and W. Jank, “New Global Optimization Algorithms for Model-Based Clustering,” working paper, 2008.
- J.W. Heath, M.C. Fu, and W. Jank, “Global Convergence of Model Reference Adaptive Search for Gaussian Mixtures,” working paper, 2008.
- D. He, L.H. Lee, C.H. Chen, M.C. Fu, and S. Wasserkrug, “Simulation Optimization Using the Cross-Entropy Method with Optimal Computing Budget Allocation,” *ACM Transactions on Modeling and Computer Simulation*, under review, 2008.
- H.S. Chang, J. Hu, M.C. Fu, and S.I. Marcus, “Nonstochastic Multi-Armed Bandit Approach to Stochastic Discrete Optimization,” *IEEE Transactions on Automatic Control*, under review, 2008.
- E. Fernández-Gaucherand, J. Crabtree, J.A. Ramírez-Hernández, X. Yao, M.C. Fu, M. Janakiram, S.I. Marcus, M. O’Connor, and N. Patel, “Optimal Preventive Maintenance Scheduling in Semiconductor Manufacturing Systems: Software Tool & Simulation Case Studies,” *IEEE Transactions on Semiconductor Manufacturing*, under review, 2006.
- X. Xiong, S.K. Juneja and M.C. Fu, “Asymptotically Optimal Simulation Allocation under Dependent Sampling,” working paper, 2006.
- W.C. Howell and M.C. Fu, “Simulation Optimization of Traffic Light Signal Timings via Perturbation Analysis,” working paper, 2006.
- M.C. Fu and X. Jin, “Convergence of Simulation-Based Policies for Stochastic Dynamic Programming,” under revision.
- J. Chen and M.C. Fu, “Efficient Sensitivity Analysis of Mortgage Backed Securities,” presented at the *12th Annual Derivatives Securities Conference*, 2002.
- A.A. Assad, M.C. Fu, and J.S. Yoo, “A Lower Bounding Result for the Optimal Policy in an Adaptive Staffing Problem,” under revision.
- A. Díaz and M.C. Fu, “Multi-Echelon Models for Repairable Items: A Review,” under revision.

## Invited Lectures/Seminars

- November 30, 1990, Atlanta, Georgia, Georgia Institute of Technology, “Perturbation Analysis of (s,S) Inventory Systems.”
- April 12, 1991, Charlottesville, Virginia, University of Virginia, “Perturbation Analysis of (s,S) Inventory Systems.”
- June 2, 1993, Boston, Massachusetts, Boston University “Derivative Estimation for (s,S) Inventory Systems: Random Lead Times and Continuous Time Demand Arrivals.”
- October 21, 1994, Charlottesville, Virginia, University of Virginia, “A Review of Techniques for Simulation Optimization.”
- October 10, 1995, Tilburg University, Center for Economic Research, the Netherlands, “Perturbation Analysis of Stochastic Discrete Event Dynamic Systems.”

- May 20-31, 1996, Tilburg University, Center for Economic Research, the Netherlands, “Perturbation Analysis of Stochastic Discrete Event Systems” (series of invited lectures on current research).
- June 19-21, 1996, Landelijk Netwerk Mathematische Besliskunde National Workshop, Timmerbergen Institute, Amsterdam, the Netherlands, “Gradient Estimation in Stochastic Discrete-Event Simulation via Perturbation Analysis” (two invited talks).
- May 25, 1998, Ecole Nationale D’Ingenieur (ENIM), Metz, France, “Operational Methods in Semiconductor Manufacturing: Integrating Product Dynamics and Process Models.”
- May 28, 1998, Laboratoire d’Informatique de Paris 6 (LIP6-CNRS) Universite Pierre et Marie Curie, Paris, France, “Operational Methods in Semiconductor Manufacturing: Integrating Product Dynamics and Process Models.”
- May 29, 1998, Canterbury Business School, University of Kent at Canterbury, England, “Conditional Monte Carlo: Gradient Estimation and Optimization Applications.”
- September 25, 1998, Boston University, Department of Manufacturing Engineering, “Operational Methods in Semiconductor Manufacturing: Integrating Product Dynamics and Process Models.”
- October 28, 1998, University of Maryland, Institute for Systems Research, Student Association Colloquium, “Operational Methods in Semiconductor Manufacturing: Integrating Product Dynamics and Process Models.”
- May 18, 1999, Ecole Nationale D’Ingenieur (ENIM), Metz, France, “Markov Decision Processes for Semiconductor Fab-Level Decision Making.”
- July 7, 1999, Guanghua Business School, Peking University, China, “Pricing of American-Style Options via Monte Carlo Simulation.”
- September 21, 1999, University of Illinois at Urbana-Champaign, Department of Mechanical and Industrial Engineering, “Pricing of American-Style Options via Monte Carlo Simulation.”
- October 22, 1999, Harvard University, Division of Applied Sciences, “Pricing of American-Style Options via Monte Carlo Simulation.”
- October 26, 1999, Cornell University, School of Operations Research and Industrial Engineering, “Markov Decision Processes for Integrating Life Cycle Dynamics into Fab-Level Decision Making.”
- October 27, 1999, Cornell University, School of Operations Research and Industrial Engineering, “Pricing American Options: A Comparison of Monte Carlo Simulation Approaches.”
- January 11, 2000, University of Texas (Austin), College of Business Administration, Center for Computational Finance, “Pricing of American-Style Options via Monte Carlo Simulation.”
- May 30, 2000, Groupe Ecole Supérieure de Commerce – Bordeaux School of Business, “Operational Methods in Semiconductor Manufacturing: Integrating Product Dynamics and Process Models.”
- June 19, 2000, Seoul National University, Department of Mathematics, “Pricing of American-Style Options via Monte Carlo Simulation.”

- November 14, 2000, University of Maryland, Department of Mathematics, Statistics Seminar, “Pricing of American-Style Options via Monte Carlo Simulation.”
- March 16, 2001, George Mason University, Department of Systems Engineering & Operations Research, “Pricing of American-Style Options via Monte Carlo Simulation.”
- October 18, 2001, Department of Industrial Engineering and Management Sciences, Northwestern University, “Pricing of American-Style Derivatives via Monte Carlo Simulation.”
- December 4, 2001, University of Maryland, Scientific Computation Seminar, “Optimization via Simulation: Theory and Practice.”
- November 6, 2002, Asian Simulation Conference Shanghai, China (plenary lecture) “Optimization for Discrete-Event Simulation: Theory and Practice,” Asian Simulation Conference/The 5th International Conference on System Simulation and Scientific Computing.
- April 30, 2002, Cornell University, School of Operations Research and Industrial Engineering, “An Adaptive Sampling Algorithm for Solving Markov Decision Processes.”
- May 9, 2002, MIT Operations Research Center Seminar Series, “A Large Deviations Analysis of Quantile Estimation with Application to Value at Risk.”
- March 13, 2003, Georgia Institute of Technology, Department of Industrial & Systems Engineering and Department of Mathematics, “American-Asian Options: Optimal Exercise Policies and Simulation-based Valuation.”
- March 14, 2003, University of Cincinnati, co-sponsored by College of Business, Department of Quantitative Analysis & Operations Management, and Department of Electrical and Computer Engineering and Computer Science, “Pricing American-Style Derivatives via Monte Carlo Simulation.”
- November 14, 2003, Boston University, Center for Information and Systems Engineering, “American-Asian Options: Optimal Exercise Policies and Simulation-based Valuation.”
- November 24, 2003, University of Colorado, Leeds School of Business, “American-Asian Options: Optimal Exercise Policies and Simulation-based Valuation.”
- February 20, 2004, University of Florida, Department of Industrial and Systems Engineering, “American-Asian Options: Optimal Exercise Policies and Simulation-based Valuation.”
- May 7, 2004, University of Kansas, School of Business, “Pricing of American-style Derivatives via Monte Carlo Simulation.”
- June 30, 2004, Guanghua School of Management, Peking University, China, “Population-Based Evolutionary Approaches for Solving Markov Decision Processes.”
- July 5, 2004, Center for Intelligent and Networked Systems, Tsinghua University, China, “Population-Based Evolutionary Approaches for Solving Markov Decision Processes.”
- February 28, 2005, University of California, Berkeley, Department of Industrial Engineering and Operations Research, “Stochastic Gradient Estimation.”
- April 22, 2005, Boston University, Department of Manufacturing Engineering, “Model Reference Adaptive Search: A New Approach to Global Optimization.”

- April 26, 2005, Princeton University, Department of Operations Research and Financial Engineering, “Stochastic Gradient Estimation.”
- June 13, 2005, Argonne - University of Chicago - Northwestern - Wisconsin Optimization Tutorials, featured invited speaker, “Optimization for Simulation.”
- July 18, 2005, Peking University, Guanghua School of Management, “Model Reference Adaptive Search: A New Approach to Global Optimization;” also July 22, 2005, Zhejiang University, Hangzhou, China, College of Information Science and Engineering.
- July 22, 2005, Zhejiang University, Hangzhou, China, College of Information Science and Engineering, “Optimization for Simulation: Theory and Practice.”
- December 16, 2005, Instituto de Empresa, Madrid, Spain, “Monte Carlo Simulation for Derivatives Pricing.”
- April 3, 2006, Cocoyoc, Mexico, NSF Workshop on Approximate Dynamic Programming, “Introduction to Simulation.”
- June 12, 2006, Haholmen by Molde, Norway, Workshop on Stochastics in Logistics and Transportation, “Simulation and Optimization.”
- August 11, 2006, Zhejiang University, Hangzhou, China, College of Information Science and Engineering, “Model-Based Randomized Methods for Global Optimization.”
- March 23, 2007, Carnegie Mellon University, Tepper School of Business, “Computational Algorithms for Markov Decision Processes.”
- April 20, 2007, SUNY Buffalo, Department of Industrial Engineering, “Model Reference Adaptive Search for Global Optimization.”
- June 20, 2007, Tsinghua University, China, Center for Intelligent and Networked Systems, “Model-Based Randomized Methods for Global Optimization.”
- August 6, 2007, Fudan University, Shanghai, China, School of Management, “Model-Based Randomized Methods for Global Optimization.”
- March 21, 2008, Duke University, Fuqua School of Business, “A Model Reference Adaptive Search Method for Global Optimization.”
- April 23, 2008, University of Minnesota, Department of Mechanical Engineering, “A Model Reference Adaptive Search Method for Global Optimization.”
- June 21, 2008, Tsinghua University, China, Center for Intelligent and Networked Systems, International Workshop on Emerging Frontiers in Systems and Control, “Simulation and Derivatives: Past, Present, & Future; A 30-Year Retrospective.”
- June 26, 2008, Zhejiang University, Hangzhou, China, College of Information Science and Engineering, “Stochastic Gradient Estimation.”