

CURRICULUM VITAE

DAVID GAMARNIK

Nanyang Technological University Associate Professor of
Operations Research

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Research interests

Applied probability, stochastic processes and queueing theory, applications to health care and service management, random graphs and probabilistic analysis of combinatorial structures, algorithms and combinatorial optimization, computational learning theory.

Working Experience

2007-Present	Associate Professor of Operations Research, Sloan School of Management, MIT.
2005-2007	Assistant Professor of Operations Research, Sloan School of Management, MIT.
1997-2005	IBM, T.J.Watson Research Center. Department of Mathematical Sciences. Research Staff Member.

Teaching Experience

- Data, Models and Decisions [Fall 2007, 2008, 2010].

- Fundamentals of Probability [Fall 2006, 2009].
- Systems Optimization and Analysis for Manufacturing [Summer 2006].
- Queues: Theory and Applications [Spring 2006].
- Applied Probability Seminar [Spring 2006,2007,2009,2011].
- Advanced Stochastic Processes [Fall 2005, 2009].

Education

1993-1998	Ph.D. in Operations Research, MIT.
1991-1993	B.A. in Mathematics, Courant Institute of Math. Sci., New York University.
1986-1991	Department of mathematics, State University of Georgia, USSR.

Honors and Awards

- Stanislaw Ulam Fellow, Los Alamos National Laboratory, 2012
- INFORMS Applied Probability Society Best Publication Award, 2011
- IBM Faculty Award, 2006
- Erlang Prize, Applied Probability Society of INFORMS, 2004
- National Science Foundation Fellowship Honorable Mention List, 1993
- Hollis Cooley Memorial Prize presented for exceptional promise in mathematics Courant Institute of Mathematical Sciences, 1992
- Top 100 in Putnam Mathematical competition, 1991
- Winner of the Quant journal competition in mathematics for high school students, 1985,1986
- Winner of several high school and college olympiad in mathematics 1985-1988

Grants

- Brigham and Women's Hospital-MIT Project on Scheduling First responders 2008-Present
- NSF Grant CMMI-1031332, 2010-2013

- NSF Grant CMMI-0726733, 2007-2009
- NSF Grant DMS-0732175, 2007-2009
- Buchsbaum Grant, 2006

Plenary Presentations and Tutorials

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|---------|---|
| 11/2011 | Markov Lecture Discussant at INFORMS 2011, Applied Probability Society. |
| 10/2011 | Tutorial lecture at Young European Queueing Theorists conference, EURANDOM, Eindhoven, Netherlands. |
| 05/2011 | 15-th International Conference on Random Structures and Algorithms, Atlanta, GA. |
| 06/2008 | Sixth International Workshop on Matrix- Analytic Methods (MAM6), Beijing, China, |
| 01/2008 | 33-d Conference on the Mathematics of Operations Research, Lunteren, Netherlands. Invited lectures.
<i>Lecture I: Algorithmic issues and undecidability in the theory of queueing networks,</i>
<i>Lecture II: Large scale queueing systems in the Quality/Efficiency driven regime and applications,</i> |

Professional Activities

- Affiliate member of the Operations Research Center, MIT.
- Affiliate member of MIT Laboratory for Information and Decision Systems (LIDS).
- Area Editor of Operations Research (2011 – Present).
- Associate Editor of Annals of Applied Probability (2007 – Present).
- Associate Editor of Mathematics of Operations Research (2010 – Present).
- Associate Editor of Queueing Systems: Theory and Applications (2010 – Present).
- Associate Editor of Stochastic Systems (2010 – Present).
- Guest editor for SIAM Journal on Discrete Mathematics Special Issue on Constraint Satisfaction Problems and Message Passing Algorithms.

- Council member of Applied Probability Society of INFORMS (term 2006–2008).
- Applied Probability Cluster Chair for INFORMS 2006 conference, Pittsburgh, PA.
- Panel discussion participant at the MSRI workshop Phase Transition and Reconstruction, 2005.
- Program committee:
 - 27th Annual ACM SIGACT-SIGOPS Symposium on Principles of Distributed Computing (PODC 2008).
 - ACM International Conference on Measurement and Modeling of Computer Systems (SIGMETRICS) 2010.
 - INFORMS Applied Probability Conference, 2005, 2009, 2011.
 - 7-th International Conference on Matrix-Analytic Methods (MAM7), New York, NY,
 - Mathematical Performance Modeling and Analysis 2001, 2003-2011.
- Member of IMS (Institute of Mathematical Statistics), INFORMS (Institute for Operations Research and Management Science) AMS (American Mathematical Society), SIAM (Society for Industrial and Applied Mathematics)
- Refereeing for journals:
 - Algorithmica
 - Annals of Applied Probability
 - Combinatorics Probability and Computing
 - Discrete Applied Mathematics
 - Electronic Journal on Combinatorics
 - Electronic Journal on Probability
 - IEEE Transactions on Automatic Control
 - INFOR: Canadian Journal on Operations Research
 - INFORMS Journal of Computation
 - Indiana University Mathematics Journal
 - Information Processing Letters
 - Journal of Algorithms
 - Journal of Combinatorial Theory
 - Journal on Parallel and Distributed Computing
 - Journal of Physics A: Mathematical and Theoretical
 - Journal of Scheduling
 - Journal of the ACM
 - Linear Algebra and Applications
 - Machine Learning
 - Management Science
 - Mathematics of Operations Research

Performance Evaluation
Operations Research
Operations Research Letters
Queueing Systems: Theory and Applications
Random Structures and Algorithms
Royal Society Proceedings A
SIAM Journal on Computing
Theory of Computing Systems

- Refereeing for conferences:
International Colloquium on Automata, Languages and Programming (ICALP) 2012
Conference on Computational Complexity 2012
MSOM (Manufacturing Services and Operations Management) Special Interest Group on Health Care
International Symposium on Information Theory
Symposium on the Theory of Computations
LATIN (Latin American Theoretical INformatics)
European Symposium on Algorithms (ESA)
Symposium on Theoretical Aspects of Computer Science
Symposium on Discrete Algorithms
SIGMETRICS
Conference on Decision and Control
Symposium on Parallelism in Algorithms and Architectures

Visiting positions

01-05/2012	Microsoft Research Lab, New England.
03/2012	Ulam Fellow visitor of Los Alamos National Laboratory.
09-12/2011	Brown University, Division of Applied Mathematics.
05/2010	Microsoft Research Lab, Redmond.
03-04/2010	Newton Institute of Mathematical Sciences, Cambridge, UK.
07/2009	Los Alamos National Laboratory.
07/2009	University of Berkeley.
01/2009	Tata Institute for Fundamental Research. Mumbai.
08/2008	Google Research. New York.
07/2008	Los Alamos National Laboratory.

03/2008	Indian Statistical Institute in Delhi.
06/2007	Microsoft Research Lab.
05/2007	Swiss Federal Institute of Technology (ETH).
05/2007	Georgia Institute of Technology.
10/2005	Microsoft Research Lab, Redmond.
04/2005	EURANDOM (European research institute for the study of stochastic phenomena), Eindhoven, Netherlands.
04/2005	Department of Mathematics and Mathematical Statistics, Chalmers University, Sweden.
03/2005	Department of Mathematical Sciences, Carnegie Mellon University.

Publications

Stochastic Processes, Queueing Theory and Applications

1. R. Anderson and D. Gamarnik. Scheduling interns at hospitals: Queueing models and fluid approximations. *Submitted*.
2. M. McManus, W. Chaiwanon, R. Levi, and D. Gamarnik. A discrete event simulation model for capacity planning and evaluation of admission control policies in busy intensive care units. In *American Society of Anesthesiologists Annual Meeting*, 2011.
3. D. Gamarnik and D. Katz. Stability of Skorokhod problem is undecidable. *Under review in Queueing Systems*.
4. D. Gamarnik and A. Stolyar. Multiclass multiserver queueing system in the Halfin-Whitt heavy traffic regime. asymptotics of the stationary distribution. *Under review in Queueing Systems*.
5. D. Gamarnik and D. Goldberg. Steady-state GI/GI/n queue in the Halfin-Whitt regime. *Under revision for Annals of Applied Probability*.
6. D. Bertsimas, D. Gamarnik, and A. Rikun. Performance analysis of queueing networks via robust optimization. *Operations Research*, 59:455–466, 2011.
7. D. Bertsimas, D. Gamarnik, and A. Rikun. Basestock Policies in Supply Chain Networks: Robust vs. Stochastic Optimization. *Submitted. Conference version in MSOM 2010*.
8. D. Gamarnik and D. Goldberg. Convergence to stationarity of the multiserver queueing system in the Halfin-Whitt regime. *Under second revision for Annals of Applied Probability*.
9. T.I.Schoenmeyr, D.Gamarnik, R.Levi, P.F.Dunn, B.J.Daily, D.L.Berger, W.C. Levine, and W.S.Sandberg. A model for understanding the impacts of demand and capacity on waitlists in a congested recovery room. *Anesthesiology*, 110:1293-1304, 2009.
10. D. Gamarnik and D. Katz-Rogozhnikov. On deciding stability of queueing networks under priority scheduling policy. *Annals of Applied Probability*, 19:2008–2037, 2009.
11. D. Gamarnik and S. P. Meyn. On exponential ergodicity of multiclass queueing networks. *Queueing Systems*, 65:109–133, 2010.

12. D. Gamarnik and P. Momčilović. Steady-state analysis of a multi-server queue in the Halfin-Whitt regime. *Advances in Applied Probability*, 40:548–577, 2008.
13. F. Cheng, D. Gamarnik, N. Jengte, W. Min, and B. Ramachandran. Modeling operational risks in business processes. *Journal of Operational Risk*, 2(2), 2007.
14. D. Gamarnik and A. Zeevi. Validity of heavy traffic steady-state approximations in open queueing networks. *Ann. Appl. Probab.*, 16(1):56–90, 2006.
15. N. Bansal and D. Gamarnik. Handling load with less stress. *Queueing Systems*, 54(1):45–54, 2006.
16. D. Gamarnik and P. Momčilović. An asymptotic optimality of the transition rule for linear lists. *Journal of Applied Probability*, 42(1):235–246, 2005.
17. D. Gamarnik and M. Squillante. Analysis of stochastic online bin packing processes. *Stochastic Models*, 21:401–425, 2005.
18. D. Gamarnik and J. Hasenbein. Instability in stochastic and fluid queueing networks. *Ann. Appl. Probab.*, 15(3):1652–1690, 2005.
19. D. Gamarnik. Computing stationary probability distribution and large deviations rates for constrained homogeneous random walks. The undecidability results. *Mathematics of Operations Research*, 27(2):272–293, 2007.
20. D. Gamarnik. Stochastic bandwidth packing process: Stability conditions via Lyapunov function technique. *Queueing Systems*, 48:339–363, 2004.
21. D. Gamarnik. Stability of adaptive and non-adaptive packet routing policies in adversarial queueing networks. *SIAM Journal on Computing*. (Conference version in *STOC99*), pages 371–385, 2003.
22. D. Bertsimas, D. Gamarnik, and J. Tsitsiklis. Performance of multi-class Markovian queueing networks via piecewise linear Lyapunov functions. *Ann. of Appl. Probab.*, 11(4):1384–1428, 2001.
23. D. Gamarnik. On deciding stability of constrained homogeneous random walks and queueing systems. *Mathematics of Operations Research*, 27(2):272–293, 2002.
24. D. Gamarnik. Using fluid models to prove stability of adversarial queueing networks. *IEEE Transactions on Automatic Control*. (Conference version in *FOCS98*), 4:741–747, 2000.

25. D. Gamarnik. *Stability and Performance of Multiclass Queueing Networks*. MIT Thesis, 1998.
26. D. Bertsimas, D. Gamarnik, and J. Tsitsiklis. Stability conditions for multiclass fluid queueing networks. *IEEE Trans. Automat. Control*, 41:1618–1631, 1996.

Probabilistic Analysis of Combinatorial Structures

1. I. Ashlagi, D. Gamarnik, and A. E. Roth. The need for (long) chains in kidney exchange. *National Bureau of Economic Research. Market Design Working Group Meeting*, 2011.
2. A. Flaxman, D. Gamarnik, and G. Sorkin. First-passage percolation on a ladder graph, and the path cost in a VCG auction. *Random Structures and Algorithms*, 38:350–364, 2011.
3. M. Bayati, D. Gamarnik, and P. Tetali. Combinatorial approach to the interpolation method and scaling limits in sparse random graphs. In *Proc. 42nd Ann. Symposium on the Theory of Computing (STOC)*, 2010.
4. D. Gamarnik, D. Goldberg, and T. Weber. PTAS for maximum weight independent set problem with random weights in bounded degree graphs. In *Proceedings of 21-st ACM-SIAM Symposium on Discrete Algorithms (SODA)*, 2010.
5. D. Gamarnik, D. Goldberg, and T. Weber. Correlation decay in random decision networks. *Submitted*, 2009.
6. V. Chandrasekaran, M. Chertkov, D. Gamarnik, D. Shah, and J. Shin. Counting independent sets using the Bethe approximation. *SIAM Journal On Discrete Mathematics*, 25:1012–1034.
7. D. Gamarnik and D. Katz. Sequential cavity method for computing free energy and surface pressure. *Journal of Statistical Physics*, 137:205–232, 2009. Conference version in *Proceedings of 20th ACM-SIAM Symposium on Discrete Algorithms (SODA)*, 2009.
8. D. Gamarnik and D. Goldberg. Randomized greedy algorithms for independent sets and matchings in regular graphs: Exact results and finite girth corrections. *Combinatorics, Probability and Computing*, 19:61–85, 2010.
9. M. Bayati, D. Gamarnik, D. Katz, C. Nair, and P. Tetali. Simple deterministic approximation algorithms for counting matchings. In *Proc. 39th Ann. Symposium on the Theory of Computing (STOC)*, 2007.

10. D. Gamarnik and D. Katz. Correlation decay and deterministic FPTAS for counting list-colorings of a graph. *Journal of Discrete Algorithms*, pages 29–47, 2012.
11. D. Gamarnik and D. Katz. A deterministic approximation algorithm for computing a permanent of a 0,1 matrix. *Journal of Computer and System Sciences*, 76: 879–883, 2010.
12. D. Gamarnik, T. Nowicki, and G. Swirszcz. Invariant probability measures and dynamics of exponential linear type maps. *Ergodic Theory and Dynamical Systems*, 28(1):1479–1495, 2008.
13. A. Bandyopadhyay and D. Gamarnik. Counting without sampling. Asymptotics of the log-partition function for certain statistical physics models. *Random Structures and Algorithms*., 33(4), 2008.
14. D. Gamarnik. Expectation of the random minimal length spanning tree of a complete graph. In *Proceedings of 16th ACM-SIAM Symposium on Discrete Algorithms (SODA)*, 2005.
15. D. Gamarnik and M. Sviridenko. Hamiltonian completion of sparse random graphs. *Discrete Applied Mathematics*, 152:139–158, 2005.
16. D. Gamarnik, T. Nowicki, and G. Swirszcz. Maximum weight independent sets and matchings in sparse random graphs. Exact results using the local weak convergence method. *Random Structures and Algorithms*, 28(1):76–106, 2006.
17. A. Flaxman, D. Gamarnik, and G. Sorkin. Embracing the giant component. *Random Structures and Algorithms*, 27(3):277–289, 2005.
18. D. Gamarnik. Linear phase transition in random linear constraint satisfaction problems. *Probability Theory and Related Fields*., 129(3):410–440, 2004.
19. D. Coppersmith, D. Gamarnik, M. Hajiaghayi, and G. Sorkin. Random MAXSAT, random MAXCUT, and their phase transitions. *Random Structures and Algorithms*, 24(4):502–545, 2004.
20. B. Bollobás, D. Gamarnik, O. Riordan, and B. Sudakov. On the value of a random minimum length Steiner tree. *Combinatorica*, 24(2):187–207, 2004.
21. D. Coppersmith, D. Gamarnik, and M. Sviridenko. The diameter of a long-range percolation graph. *Random Structures and Algorithms*, 21:1–13, 2002.

Algorithms and Combinatorial Optimization

1. D. Gamarnik, D. Shah, and Y. Wei. Belief propagation for min-cost network flow: Convergence & correctness. *Operations Research. To appear. Conference version at Proceedings of 21-st ACM-SIAM Symposium on Discrete Algorithms (SODA)*.
2. D. Gamarnik, M. Lewenstein, and M. Sviridenko. An improved upper bound for TSP in cubic 3-connected graphs. *Operations Research Letters*, 33:467–474, 2005.
3. D. Bertsimas, D. Gamarnik, and J. Sethuraman. From fluid relaxations to practical algorithms for job shop scheduling: the holding cost objective. *Operations Research*, 51(5):798–813, 2003.
4. D. Gamarnik and M. Sviridenko. Static and dynamic hot-potato packet routing in communication networks. IBM Technical Report #RC 21918, 2000.
5. D. Bertsimas and D. Gamarnik. Asymptotically optimal algorithm for job shop scheduling and packet routing. *Journal of Algorithms*, 33(2):296–318, 1999.

Statistical Learning Theory and Other

1. D. Gamarnik. Extension of the PAC framework to finite and countable Markov chains. *IEEE Transactions on Information Theory*, 49(1):338–345, 2003.
2. D. Gamarnik. Efficient learning of monotone concepts via quadratic optimization. *Proc. 11th ACM Conf. on Computational Learning Theory*, 1998.
3. D. Bertsimas, D. Gamarnik, and J. Tsitsiklis. Estimation of time-varying parameters in statistical models: An optimization approach. Invited paper in *Machine Learning*, 35:225–245, 1999.
4. D. Gamarnik. Minimality of the group AUT(C). *SERDICA - Bulgaricae mathematicae publicationes*, 17:197–201, 1991.

Patents

- *Method and Apparatus for Risk Assessment for a Disaster Recovery Process*. Co-inventors: J. Hosking, W.F. Kane, T. Li, I. Yashchin.

- *Methods and Apparatus for the Design and Planning of Workforce Evolution.* Co-inventors: B. Dietrich, M. Hellander, M. Squillante.
- *Method and Apparatus for Operational Risk Assessment and Mitigation.* Co-inventors: F. Chen, W. Min, B. Ramachandran, S. Takriti.
- *Method and Apparatus for Business Process Analysis & Optimization.* Co-inventors: B. Ramachandran, M. Squillante, Y. Lu, N. Jengte.

Invited Presentations at universities

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|-----------|---|
| 11/2011 | <i>Interpolation method and scaling limits in sparse random graphs</i>
Department of Mathematical Sciences, Carnegie-Mellon University, PA. |
| 11/2011 | <i>Correlation decay property and inference in Markov Random Fields.</i> Division of Applied Mathematics, Brown University. |
| 10/2011 | <i>Intractability results in the theory of queueing systems.</i> Department of Mechanical Engineering, University of Texas, Austin, TX. |
| 06/2011 | <i>Parallel server queueing systems in the heavy traffic regime.</i> Department of Electrical and Computer Engineering, University of Waterloo, Canada. |
| 2010-2011 | <i>A combinatorial approach to the interpolation method and scaling limits in sparse random graphs.</i>
Microsoft Research Lab, New England;
UCLA, Department of Mathematical Sciences;
National Security Agency, Department of Mathematical Sciences;
University of Maryland, College Park, Department of Statistics;
IBM T.J. Watson Research Center;
French National Institute for Research in Computer Science and Control (INRIA);
MIT Probability Seminar;
Georgia Institute of Technology; |
| 04/2010 | <i>Skorokhod problem is undecidable.</i> Newton Institute of Mathematical Sciences, Cambridge University, UK. |
| 02/2010 | <i>Statistical physics methods in combinatorial optimization, inference and graphical games.</i> Department of Industrial Engineering and Operations Research, Cornell University. |

- 04/2009 *Parallel server queueing systems in the heavy traffic regime.* Industrial Engineering and Operations Research, Columbia University.
- 03/2009 *Parallel server queueing systems in the heavy traffic regime.* Industrial Engineering and Operations Research, Georgia Institute of Technology.
- 02/2009 *Correlation decay property and inference in Markov Random Fields.* Stochastic Systems Group seminar, EECS, MIT.
- 11/2008 *Queueing systems in the Halfin-Whitt regime.* Management Science and Engineering, Stanford University.
- 08/2008 *Statistical physics and algorithms for graph counting problems.* Google Research.
- 03/2008 *Correlation decay and applications to the problems of combinatorial enumeration and optimization.* Indian Statistical Institute at Delhi. India.
- 05/2007 *Correlation decay and applications to counting problems,* Department of Mathematics, Georgia Institute of Technology.
- 05/2007 *Correlation decay and applications to counting problems,* Combinatorics Seminar, Princeton University.
- 04/2006 *Asymptotic Results in Single and Multiclass Type Queueing Networks,* Electrical and Computer Engineering, University of Waterloo.
- 04/2006 *Single class type queueing networks in heavy-traffic,* Engineering Systems Division, University of Illinois at Urbana-Champaign.
- 02/2006 *Asymptotic Results in Single and Multiclass Type Queueing Networks,* Kellogg School of Management, NWU.
- 10/2005 *Correlation decay in statistical physics and applications to counting problems,* Microsoft Research Lab.
- 04/2005 *Applications of the local weak convergence method to random graph problems,*
Statistics Seminar, Chalmers University, Sweden;
Discrete Mathematics Seminar, Carnegie-Mellon University;
Discrete Mathematics Seminar, Princeton University;
Combinatorics Seminar, MIT.

- 04/2005 *Validity of Heavy Traffic Steady-State Approximations in Open Queueing Networks*, EURANDOM, Eindhoven University of Technology, Netherland.
- 01/2005 *Asymptotic Results in Single and Multiclass Type Queueing Networks*, Probability and Statistics Seminar, Division of Applied Mathematics, Brown University.
- 10/2004 *Validity of Heavy Traffic Steady-State Approximations in Open Queueing Networks*, Stanford University.
- 10/2002 *Linear Phase Transition in Random Linear Constraint Satisfaction Problem*, Princeton University, Department of Mathematics.
- 05/2002 *Stochastic Networks, Analysis and Optimization*, MIT, Operations Research Center.
- 01/2002 *The Diameter of a Long-Range Percolation Graph*, Almaden Research Center, IBM.
- 03/2000 *On Deciding Stability of Scheduling Policies in Queueing Systems*, Boston University, Department of Manufacturing Engineering.
- 10/2000 *On deciding stability of scheduling policies in queueing systems*, Dept. of Math Sciences, T.J.Watson Research Center, IBM.
- 02/2000 *On Deciding Stability of Scheduling Policies in Queueing Systems*, MIT, Operations Research Center.
- 01/1999 *Stability of Adversarial Queues via Fluid Models*, Bell Labs.
- 12/1998 *Stability of Adversarial Queues via Fluid Models*, Systems Design, Analysis & Theory seminar. T.J.Watson Research Center, IBM.
- 01/1998 *Performance Analysis of Multiclass Queueing Networks*, Dept. of Math Sciences, T.J.Watson Research Center, IBM.

Invited and Refereed Conference and Workshop Presentations

- 11/2011 *Interpolation method and scaling limits in sparse random graphs*. Workshop on Counting, Inference and Optimization on Graphs, Princeton University, Princeton, NJ.

- 08/2011 *Parallel server queueing systems in the Halfin-Whitt heavy traffic regime.* 5th Conference on Limit Theorems in Probability Theory and Their Applications
- 07/2011 *Combinatorial Approach to the Interpolation Method and Scaling Limits in Sparse Random Graphs.* International Mathematical Conference "50 years of Institute for Problems of Information Transmission"
- 07/2011 *Skorokhod problem is undecidable.* 16th INFORMS/Applied Probability Society Conference, Stockholm, Sweden.
- 07/2011 *Interpolation method and scaling limits in sparse random graphs.* 16th INFORMS/Applied Probability Society Conference, Stockholm, Sweden.
- 04/2011 *Interpolation method and scaling limits in sparse random graphs.* International Conference on Probability, Statistics, and Data Analysis, Raleigh, NC.
- 01/2011 *Right-convergence of sparse random graphs and the interpolation method.* Oberwolfach workshop on Combinatorics, Obwerwolfach, Germany.
- 10/2010 *Parallel server queueing systems in the heavy traffic regime.* Oberwolfach workshop on Mathematical Challenges in Stochastic Networks, Obwerwolfach, Germany.
- 09/2010 *Interpolation method and scaling limits in sparse random graphs.* 34-th Conference on Stochastic Processes and Applications, Osaka, Japan.
- 03/2010 *A combinatorial approach to the interpolation method and scaling limits in sparse random graphs.* One-Day Meeting in Combinatorics Mathematical Institute University of Oxford, UK.
- 02/2010 *Statistical physics methods in combinatorial optimization, inference and graphical games.* Workshop on Frontiers of Controls, Games, and Network Science with Civilian and Military Applications, University of Texas, Austin.
- 10/2009 *A combinatorial approach to Guerra's interpolation method.* Probabilistic Techniques and Applications workshop at Institute for Pure and Applied Mathematics, UCLA, Los Angeles, CA.

- 08/2009 *Combinatorial approach to the interpolation method and scaling limits in sparse random graphs.* Physics of algorithm workshop, Santa Fe, NM.
- 07/2009 *Correlation Decay and Efficient Inference in Markov Random Fields,* 15th INFORMS/Applied Probability Society Conference, Cornell University, Ithaca, NY.
- 01/2009 *Correlation Decay and Deterministic Algorithms for Counting. Tutorial.* Tata Institute for Fundamental Research. Mumbai, India.
- 01/2009 *Sequential cavity method and applications to free energy computations,* Symposium on Discrete Algorithms (SODA2009). New York, NY.
- 10/2008 *Long-range independence and combinatorial optimization with random costs.* DIMACS Working Group on Message-Passing Algorithms. Rutgers University, NJ.
- 06/2008 *Applications of cavity method to combinatorial enumeration and optimization,* International Workshop on Phase Transitions, Hard Combinatorial Problems and Message Passing Algorithms Banff International Research Center. Alberta. CA.
- 12/2007 *Correlation decay and applications to the problems of combinatorial enumeration and optimization.* Advances in Analysis of Monte Carlo Methods. Harvard University.
- 07/2007 *Steady-state analysis of a multi-server queueing system in QED regime,* 14th INFORMS/Applied Probability Society Conference, Eindhoven, Netherlands.
- 07/2007 *Undecidability results in the theory of queueing networks and Skorokhod problem,* 14th INFORMS/Applied Probability Society Conference, Eindhoven, Netherlands.
- 07/2007 *Stability and Performance Analysis of a Feedforward Type Infinite Markov Chains,* 14th INFORMS/Applied Probability Society Conference, Eindhoven, Netherlands.
- 07/2007 *Correlation decay and counting list-colorings of a graph.* Common concepts in Statistical Physics and Computer Science, Trieste, Italy.
- 05/2007 *Correlation decay, statistical physics and applications to counting problems.* "Problems at the interface of discrete mathematics and

- statistical physics” minisymposium at 1st Canadian Discrete and Algorithmic Mathematics Conference, Banff, Alberta, Canada.
- 05/2007 *Correlation decay, statistical physics and applications to counting problems.* ETH Combinatorics Day, ETH, Zurich, Switzerland.
- 04/2007 *Monomer-dimer model and a new deterministic approximation algorithm for computing a permanent of a 0,1 matrix.* DIMACS Workshop on Phase Transitions in Random Structures and Algorithms. Georgia Institute of Technology.
- 01/2007 *Correlation decay and counting list-colorings of a graph,* Symposium on Discrete Algorithms (SODA2007). New Orleans, LA.
- 12/2006 *Undecidability results in the theory of queueing networks.* Bertinoro Workshop on Adversarial Modeling and Analysis of Communication Networks.
- 11/2006 *Steady-state analysis of a multi-server queueing system in QED regime.* INFORMS.
- 10/2006 *Correlation decay in statistical physics and applications to counting problems.* DIMACS Workshop on Properties of Large Graphs: From Combinatorics to Statistical Physics and Back.
- 06/2006 *Correlation Decay in Statistical Physics and Applications to Counting Problems,* SIAM Conference on Discrete Mathematics, University of Victoria, Victoria, BC.
- 06/2006 *Spatial decay of correlations and efficient methods for computing partition functions,* Conference on Stochastic Networks 2006, invited presentation. University of Illinois at Urbana-Champaign.
- 01/2006 *Counting without sampling New algorithms for enumeration problems using statistical physics,* Symposium on Discrete Algorithms (SODA2006). Miami, FL.
- 10/2005 *Exponential Ergodicity in Multi-Class Queueing Networks,* INFORMS 2005, San-Francisco, CA.
- 07/2005 *Validity of Steady-State Heavy Traffic Approximations in Generalized Jackson Networks,* 13th INFORMS/Applied Probability Society Conference, Ottawa, Canada.
- 07/2005 *Exponential Ergodicity in Multi-Class Queueing Networks,* 13th INFORMS/Applied Probability Society Conference, Ottawa, Canada.

- 07/2005 *Counting without sampling New algorithms for enumeration problems using statistical physics*, 13th INFORMS/Applied Probability Society Conference, Ottawa, Canada.
- 03/2005 *Applications of the local weak convergence method to random graph problems*, MSRI Workshop of Phase Transition and Reconstruction Problems. Berkeley, CA.
- 01/2005 *The Expected Value of a Random Minimum Length Spanning Tree of a Complete Graphs*, Symposium on Discrete Algorithms (SODA2005). Vancouver, BC.
- 10/2004 *Validity of Heavy Traffic Steady-State Approximations in Open Queueing Networks*, INFORMS 2004, Denver, CO.
- 08/2004 *Maximum Weight Independent Sets and Matchings in Sparse Random Graphs*, Approx-Random 2004 workshop, Harvard University, Cambridge, MA.
- 07/2004 *Large Deviations Principle in Constrained Homogeneous Random Walks and Queueing Systems*, 12th INFORMS/Applied Probability Society Conference, Beijing, China.
- 07/2004 *Stochastic Online Bin Packing Problem*, 12th INFORMS/Applied Probability Society Conference, Beijing, China.
- 06/2004 *Asymptotic Optimality of the Transposition Rule in Linear Lists*, Mathematical Modeling and Analysis workshop, New York, NY.
- 01/2004 *Linear Phase Transition in Random Linear Constraint Satisfaction Problem*, Symposium on Discrete Algorithms (SODA2004). New Orleans, LA.
- 10/2003 *Weak Instability in Stochastic and Fluid Queueing Networks*, INFORMS 2003, Atlanta, GA.
- 09/2003 *Linear Phase Transition in Random Linear Constraint Satisfaction Problem*, Discrete Random Walk: Theory and Applications, Institute Henri Poincare, Paris, France.
- 05/2003 *Weak Instability in Stochastic and Fluid Queueing Networks*, Mathematical Modeling and Analysis workshop, San Diego, CA.
- 09/2002 *The Diameter of a Long-Range Percolation Graph*, "Algorithms, Trees, Combinatorics and Probability" Colloquium, University of Versailles, France.

- 01/2002 *The Diameter of a Long-Range Percolation Graph*, Symposium on Discrete Algorithms (SODA2002). San-Francisco, CA.
- 07/2001 *Computing Fluid Limits and Stationary Distributions for Constrained Random Walks and Queueing Systems*, 11th INFORMS/Applied Probability Society Conference, New York, NY.
- 07/2001 *Stochastic Online Bin Packing Problem: Exact Conditions for Stability under the Best Fit Heuristic*, 11th INFORMS/Applied Probability Society Conference, New York, NY.
- 07/2001 *Static and Dynamic Packet Routing in Communications Networks*, 11th INFORMS/Applied Probability Society Conference, New York, NY.
- 06/2001 *Stochastic Online Bin Packing Problem: Exact Conditions for Stability under the Best Fit Heuristic*, Mathematical Performance Modeling and Analysis workshop. Cambridge, MA.
- 12/2000 *Performance of Multiclass Markovian Queueing Networks via Piecewise Linear Lyapunov Functions*, Conference on Decision and Control. Invited presentation. Sydney, Australia.
- 12/2000 *Static and Dynamic Packet Routing in Communications Networks*, INFORMS. Invited presentation. San-Antonio, TX.
- 06/2000 *Performance of Multiclass Markovian Queueing Networks via Piecewise Linear Lyapunov Functions*, Conference on Stochastic Networks. Madison, WI.
- 06/2000 *On Deciding Stability of Constrained Homogeneous Random Walks and Queueing Systems*, Mathematical Performance Modeling and Analysis workshop. Santa Jose, CA.
- 02/2000 *On Deciding Stability of Scheduling Policies in Queueing systems*, Symposium on Discrete Algorithms (SODA2000). San-Francisco, CA.
- 12/1999 *Asymptotically Optimal Algorithm for Job Shop Scheduling*, Conference on Decision and Control. Invited presentation. Phoenix, AZ.
- 10/1999 *On Deciding Stability of Scheduling Policies in Queueing Systems*, INFORMS. Invited presentation. Philadelphia, PA.
- 07/1999 *Performance Analysis of Multiclass Markovian Queueing Networks*, Conference on Applied Probability, Ulm, Germany.

- 07/1999 *Extension of the PAC Framework to Finite and Countable Markov Chains*, 12-th Annual Conference on Computational Learning Theory, U of Santa Cruz, CA.
- 05/1999 *Performance Analysis of Multiclass Markovian Queueing Networks*, Mathematical Performance Modeling and Analysis workshop. Invited presentation. Atlanta, GA.
- 05/1999 *Stability of Adaptive and Non-Adaptive Packet Routing Policies in Adversarial Queueing Networks*. Proc. 31st ACM Symposium on Theory of Computing (STOC1999). Atlanta, GA.
- 10/1998 *Stability of Adversarial Queues via Fluid Models*, 29th IEEE Conf. on Foundations of Computer Science (FOCS1998). San Francisco, CA.
- 07/1998 *Efficient Learning of Monotone Concepts via Quadratic Optimization*, 11-th Annual Conference on Computational Learning Theory. Madison, WI.
- 07/1997 *Estimation of Time-Varying Parameters in Statistical Models: An Optimization Approach*, 10-th Annual Conference on Computational Learning Theory. Nashville, TN.
- 08/1995 *Stability Conditions for Multiclass Fluid Queueing Networks under Priority and FIFO policies*, Stochastic Networks Workshop. Edinburgh, UK.
- 06/1995 *Stability Conditions for Multiclass Fluid Queueing Networks*, Conference on Applied Probability, Atlanta, GA.