

# Curriculum Vitae

## Bruno Tuffin

Chargé de Recherche INRIA

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## Personal data

Date of birth : August, 7 1971  
Place of birth : Lorient (Morbihan, France)  
Civil Status : Married, 2 children  
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## Education

- Jan. 2001-... : CR1 INRIA at Rennes
- 2006 : Habilitation in Computer Science, University of Rennes 1
- Oct. 1998-Dec. 2000 : CR2 INRIA at Rennes
- Mai 1999- Déc. 1999 : 8 months scientific stay at Duke University, NC, USA.
- Sept. 1997-August 1998 : Temporary position (A.T.E.R.) at Univ. Rennes 1
- 1997 : PhD in Mathematics, University of Rennes 1  
*Accelerated simulation by Monte Carlo and Quasi-Monte Carlo methods : theory and applications*  
Advisor : G. Rubino.
- 1997 : CAPES in Mathématiques (teaching degree).
- Sept. 1994-August 1997 : Moniteur (partial teaching position) at the University of Rennes 1.
- 1994 : Master (DEA) in Mathematics, section probability, University of Brest  
With distinction "good". Top of the year in the probability section.  
Dissertation title : *Study of low discrepancy sequences and of quasi-Monte Carlo methods.*  
Advisor : G. Rubino.
- 1993 : Maîtrise (first year of master) in Mathematics, Brest,  
with distinction "very good". Top of the year.
- 1992 : Bachelor in Mathematics, Brest,  
with distinction "very good". Top of the year.
- 1991 : DEUG A (undergraduate level) A, Brest,  
with distinction "very good". Top of the year.
- 1989 : Baccalaureat (High-School degree),  
Colbert High School, Lorient. "quite good" distinction.

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## Research topics

- Internet pricing models.
- Measurements.
- Performance and reliability analysis of communication networks.
- Monte Carlo and quasi-Monte Carlo simulation methods, with applications.

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## Publications

### A. PhD thesis :

1. B. Tuffin, Accelerated simulation by Monte Carlo and Quasi-Monte Carlo methods : theory and applications. PhD thesis, University of Rennes 1. October 1997.
2. B. Tuffin. Mathematical Modeling for the conception, the quantitative analysis and QoS control of systems. Habilitation à diriger les recherches, Université de Rennes 1. April 2006.

### B. Book :

1. B. Tuffin. *La simulation Monte Carlo*. Editions Hermès, February 2010.

### C. Edited books and special issues of journals :

1. B. Stiller, P. Reichl and B. Tuffin (eds). Performability has its price. Proceedings of the fifth International Workshop on Advanced Internet Charging and QoS technologies (ICQT'06), St Malo, France. Lecture Notes in Computer Science N.4033, Springer Verlag, 2006.
2. T. Chahed and B. Tuffin (eds). International Conference on Network Control and Optimization (NET-COOP'07), Avignon, France. Lecture Notes in Computer Science N.4465, Springer Verlag, 2007.
3. P.W. Glynn and B. Tuffin (eds). Performance Evaluation Methodologies and Tools : Selected papers from ValueTools 2007. *Performance Evaluation*, Volume 65, Issues 11+12, November 2008.
4. P. Reichl, B. Stiller and B. Tuffin (eds). Network Economics for Next Generation Networks. Proceedings of the sixth International Workshop on Advanced Internet Charging and QoS technologies (ICQT'09), Aachen, Germany. Lecture Notes in Computer Science N.5539, Springer Verlag, 2009.
5. G. Rubino and B. Tuffin (eds). *Rare Event Simulation using Monte Carlo Methods*. John Wiley & Sons, 2009.
6. G. Rubino and B. Tuffin (eds). Special issue of ACM Transactions on Modeling and Computer Simulation on Rare Event Simulation, 2009, in preparation.
7. T. Anh Trinh, P. Reichl, B. Stiller and B. Tuffin (eds). Special issue of Telecommunication Systems Journal on Socio-Economic Issues of Next Generation Networks, in preparation.

### D. Papers in scientific journals

1. B. Tuffin, On the Use of Low Discrepancy Sequences in Monte Carlo Methods. *Monte Carlo Methods and Applications*, Vol.2, Num.4, pages 295-320, 1996.  
See also the note "Comments on "On the use of low discrepancy sequences in Monte Carlo methods". *Monte Carlo Methods and Applications*. Vol.4, 1998.

2. B. Tuffin, Variance Reductions applied to Product-Form Multi-Class Queuing Networks. *ACM Transactions on Modeling and Computer Simulation*, Vol.7, Num.4, pages 478-500, 1997.
3. B. Tuffin, Variance Reduction Order Using Good Lattice Points in Monte Carlo Methods. *Computing*, Vol. 61, Num. 4, pages 371-378, 1998.
4. B. Sericola and B. Tuffin, A Fluid Queue Driven by a Markovian Queue. *Queuing Systems : Theory and Applications*, Vol.31, pages 253-264, 1999.
5. B. Tuffin, Bounded Normal Approximation in Highly Reliable Markovian Systems. *Journal of Applied Probability*, Vol. 36, Num.4, 1999.
6. B. Tuffin et L.M. Le Ny. Parallélisation d'une combinaison des méthodes de Monte Carlo et quasi-Monte Carlo et application aux réseaux de files d'attente. *RAIRO : Recherche opérationnelle*, Vol. 34, pages 85-98, 2000.
7. B. Tuffin, D.S. Chen and K.S. Trivedi, Comparison of Hybrid Systems and Fluid Stochastic Petri Nets. *Discrete Event Dynamic Systems*, Vol. 11, Num. 1, pages 77-96, 2001.
8. B. Tuffin. Revisited Progressive Second Price Auctions for Charging Telecommunication Networks. *Telecommunication Systems*, Vol. 20, Num. 3, pages 255-263, 2002.
9. H. Cancela, G. Rubino and B. Tuffin, MTTF estimation by Monte Carlo methods using Markov models. *Monte Carlo Methods and Applications*, Vol.8, Num.4, pages 312-341, 2002.
10. B. Tuffin. Charging the Internet without bandwidth reservation : an overview and bibliography of mathematical approaches. *Journal of Information Science and Engineering*, Vol. 19, pages 7-5-786, 2003.
11. P. Maillé and B. Tuffin. The Progressive Second Price Mechanism in a Stochastic Environment. *Netnomics*, Vol.5, pages 119-147, 2003.
12. D. Ros and B. Tuffin. Mathematical Model of Paris Metro Pricing Scheme for Charging Telecommunication Networks. *Computer Networks*, Vol. 46, pages 73-85, 2004.
13. C. Lécot and B. Tuffin. Comparison of Quasi-Monte Carlo-Based Methods for the Simulation of Markov Chains. *Monte Carlo Methods and Applications*, Vol.10, Num.3-4, pages 377-384, 2004.
14. B. Tuffin. Randomization of Quasi-Monte Carlo Methods for Error Estimation : Survey and Normal Approximation. *Monte Carlo Methods and Applications*, Vol.10, Num.3-4, pages 617-628, 2004.
15. Y. Hayel and B. Tuffin. A Mathematical Analysis of the Cumulus Pricing Scheme. *Computer Networks*, Vol.47, pages 907-921, 2005.
16. E. Altman, D. Barman, R. El Azouzi, D. Ros and B. Tuffin. Pricing Differentiated Services : A Game-Theoretic Approach. *Computer Networks*, Vol.50, Num. 7, pages 982-1002, 2006.
17. E. Altman, E. El-Azouzi, D. Ros and B. Tuffin. Loss Policies for Competing TCP/IP Connections. *Computer Networks*, Vol.50, Num. 11, pages 1799-1815, 2006.
18. Y. Hayel and B. Tuffin. An Optimal Congestion and Cost-Sharing Pricing Scheme for Multiclass Services. *Mathematical Methods of Operational Research*, Vol.63, Num.3, 2006.
19. G. Okten, B. Tuffin and V. Burago. A central limit theorem and improved error bounds for a hybrid-Monte Carlo sequence with applications in computational finance. *Journal of Complexity*, Vol. 22, pages 435-458, 2006.
20. P. Maillé and B. Tuffin. Pricing the Internet with Multi-Bid Auctions. *IEEE/ACM Transactions on Networking*, Vol. 14, Num. 5, pages 992-1104, 2006.

21. Y. Hayel, M. Ouarrarou and B. Tuffin. Optimal Measurement-based Pricing for an M/M/1 Queue. *Networks and Spatial Economics*, Vol. 7, Num. 2, pages 177-195, 2007.
22. P. L'Ecuyer, V. Demers and B. Tuffin. Rare Events, Splitting, and Quasi-Monte Carlo. *ACM Transactions on Modeling and Computer Simulation*, Vol. 17, Num. 2, Article 9, 2007.
23. P. L'Ecuyer, C. Lécot and B. Tuffin. A Randomized Quasi-Monte Carlo Method for Markov Chains. *Operations Research*, Vol. 56, Num. 4, Pages 958-975, July-August 2008.
24. H. Cancela, P. Rodriguez and B. Tuffin. Availability Based Pricing and Topology Upgrade of Communication Networks. *Annals of Operations Research*, Vol. 157, Num. 1, Pages 61-71, 2008.
25. P. Maillé, B. Tuffin, Y. Xing and R. Chandramouli. User Strategy Learning when Pricing a RED Buffer. *Elsevier : Simulation Modelling, Practice and Theory*, Vol. 17, Num. 3, Pages 548-557, March 2009.
26. P. L'Ecuyer, J. Blanchet, B. Tuffin, P.W. Glynn. Asymptotic Robustness of Estimators in Rare-Event Simulation. *ACM Transactions on Modeling and Computer Simulation*, to appear.
27. P. L'Ecuyer and B. Tuffin. Approximating Zero-Variance Importance Sampling in a Reliability Setting. *Annals of Operations Research*. To appear.
28. H. Le Cadre, M. Bouhtou and B. Tuffin. Modeling Consumers' Preference to Price Bundle Offers in Telecommunication industry Game when Competition among Operators. *Netnomics*, Vol. 10, Num. 9, pages 171-208, 2009.
29. B. Tuffin, H. Le Cadre, M. Bouthou. Optimal pricing strategy with compensation when QoS is not satisfied. *Annals of Telecommunication*. To appear.

#### **E. Book chapters**

1. G. Rubino, B. Tuffin. Simulations et méthodes de Monte Carlo. In : *Techniques de l'Ingénieur*, No. AF600, 2007.
2. G. Rubino and B. Tuffin. Introduction to Rare Event Simulation. In *Rare Event Analysis Using Monte Carlo Methods*, G. Rubino and B. Tuffin Eds, John Wiley& Sons, pages 1-14, 2009.
3. P. L'Ecuyer, M. Mandjes, and B. Tuffin. Importance Sampling and Rare Event Simulation. In *Rare Event Analysis Using Monte Carlo Methods*, G. Rubino and B. Tuffin Eds, John Wiley& Sons, pages 17-38, 2009.
4. P. L'Ecuyer, F. LeGland, P. Lezaud and B. Tuffin. Splitting Techniques in Rare Event Simulation. In *Rare Event Analysis Using Monte Carlo Methods*, G. Rubino and B. Tuffin Eds, John Wiley& Sons, pages 39-62, 2009.
5. P.W. Glynn, G. Rubino and B. Tuffin. Robustness properties and confidence interval accuracy issues. In *Rare Event Analysis Using Monte Carlo Methods*, G. Rubino and B. Tuffin Eds, John Wiley& Sons, pages 63-84, 2009.
6. G. Rubino and B. Tuffin. Markovian Models for Dependability Analysis. In *Rare Event Analysis Using Monte Carlo Methods*, G. Rubino and B. Tuffin Eds, John Wiley& Sons, pages 125-144, 2009.
7. H. Cancela, P. L'Ecuyer, M. Lee, G. Rubino and B. Tuffin. Analysis and Improvements of Path-Based Methods for Monte Carlo Reliability Evaluation of Static Models. In *Simulation Methods for Reliability and Availability of Complex Systems*, Springer, 2009, to appear.

#### **F. Papers in referred conference proceedings**

1. B. Tuffin, Variance Reduction Technique for a Cellular System with Dynamic Resource Sharing. *In Proceedings of the 10th European Simulation Multiconference*, p 467-471, Budapest, Hongrie, Juin 1996.
2. B. Tuffin, A new Permutation Choice in Halton Sequences and an Application to the Analysis of Product-Form Multi-Class Queuing Networks. *Second International Conference on Monte Carlo and quasi-Monte Carlo Methods in Scientific Computing, Salzburg, Austria, July 1996*. Sélectionnéto be published in a Lecture Notes in Statistics :  
B. Tuffin, A new Permutation Choice in Halton Sequences. Dans *Monte Carlo and Quasi-Monte Carlo 1996*, volume 127, Lecture Notes in Statistics, Springer Verlag, New-York, 1997.
3. B. Tuffin and K.S. Trivedi. Implementation of Importance Splitting techniques in Stochastic Petri Net Package. In *Haverkort, B.R., and Bohnenkamp, H.C. and Smith, C.U. (eds), Computer performance evaluation : Modelling tools and techniques ; 11th International Conference ; TOOLS 2000*, Lecture Notes in Computer Science, volume 1786, Springer Verlag, pages 216-229, 2000.
4. C. Hirel, B. Tuffin and K.S. Trivedi. SPNP Version 6.0. In *Haverkort, B.R., and Bohnenkamp, H.C. and Smith, C.U. (eds), Computer performance evaluation : Modelling tools and techniques ; 11th International Conference ; TOOLS 2000*, Lecture Notes in Computer Science, volume 1786, Springer Verlag, pages 354-357, 2000.
5. B. Tuffin. A randomized Quasi-Monte carlo method for the simulation of product-form loss networks. *In Proceedings of the 9th International Conference on Telecommunication Systems*, p 468-478, Dallas, TX, USA, Mars 2001.
6. B. Tuffin and K.S. Trivedi. Importance Sampling for the Simulation of Stochastic Petri nets and Fluid Stochastic Petri nets. *In Proceedings of High Performance Computing (HPC)*, pages 228-235, Seattle, WA, USA, Avril 2001.
7. H. Cancela, G. Rubino and B. Tuffin. MTTTF estimation using importance sampling on Markov models. *In Proceedings of the 5th International Conference on Industrial Logistics*, Okinawa, Japan, 2001.
8. B. Tuffin and L.M. Le Ny. Modeling and analysis of threshold queues with hysteresis using stochastic Petri nets : the monoclasse case. *In Proceedings of Petri Nets and Performance Models, PNPM'01*, pages 175-184, IEEE CS Press, Aachen, Germany, 2001.
9. L.M. Le Ny and B. Tuffin. A simple analysis of heterogeneous multi-server threshold queues with hysteresis. *In Proceedings of the Applied Telecommunication Symposium*, San Diego, USA, April 2002.
10. L.M. Le Ny and B. Tuffin. Modeling and analysis of multi-class threshold-based queues with hysteresis using Stochastic Petri Nets. *In Proceedings the International Conference on Applications and Theory of Petri Nets*. Lecture Notes in Computer Science, Springer Verlag, 2002.
11. C. Lécot and B. Tuffin. Quasi-Monte Carlo Methods for Estimating Transient Measures of Discrete Time Markov Chains. *In Fifth International Conference on Monte Carlo and Quasi-Monte Carlo Methods in Scientific Computing*, Springer, pages 329-344, 2002.
12. P. Maillé and B. Tuffin. A Progressive Second Price Mechanism with a Sanction Bid from Excluded Players. *In Third International Workshop on Internet Charging and QoS Technology, ICQT'03*, Lecture Notes in Computer Science, 2003.
13. Y. Hayel, D. Ros and B. Tuffin. Less-than-Best-Effort Services : Pricing and Scheduling. *In Proceedings of IEEE Infocom 2004*, Hong-Kong, 2004.

14. P. Maillé and B. Tuffin. Multi-Bid Auctions for Bandwidth Allocation in Communication Networks. *In Proceedings of IEEE Infocom 2004*, Hong-Kong, 2004.
15. E. Altman, E. El-Azouzi, D. Ros and B. Tuffin. Loss Policies for Competing TCP/IP Connections. *In Proceedings of Networking 2004*, Lecture Notes in Computer Science, Springer, 2004.
16. E. Altman, D. Barman, E. El-Azouzi, D. Ros and B. Tuffin. Pricing Differentiated Services : A Game-Theoretic Approach. *In Proceedings of Networking 2004*, Lecture Notes in Computer Science, Springer, 2004.
17. A. Delanda, P. Maillé and B. Tuffin. Reserve Price in Progressive Second Price Auctions. *Proceedings of the Ninth IEEE Symposium on Computers and Communications*, Alexandrie, June 2004.
18. B. Tuffin, P. Rodriguez and H. Cancela. End-To-End Reliability-Dependent Pricing of Network Services. *In the Proceedings of the 12th Latin-Ibero-American Conference on Operations Research (CLAIO'04)*, La Havana, Cuba, 2004.
19. B. Tuffin. On Numerical Problems in Simulations of Highly Reliable Markovian Systems. *In the proceedings of the 1st International Conference on Quantitative Evaluation of SysTems (QEST)*, University of Twente, Enschede, the Netherlands, IEEE CS Press, September 2004.
20. P. Maillé and B. Tuffin. Multi-bid versus Progressive Second Price Auctions in a Stochastic Environment. *In Fourth International Workshop on Internet Charging and QoS Technology, ICQT'04*, Lecture Notes in Computer Science, 2004.
21. P. L'Ecuyer, C. Lécot, B. Tuffin. Quasi-Monte Carlo simulation of Markov chains with randomized copies of a two-dimensional highly-uniform point set. *Sixth International Conference on Monte Carlo and quasi-Monte Carlo Methods*, Juan-les-Pins, France June 2004, Springer-Verlag, 2005.
22. H. Cancela, G. Rubino and B. Tuffin. Bounded Relative Efficiency in Rare Event Simulation. *In Proceedings of SAINT 2005 workshops*, IEEE CS Press, Trento, January 2005.
23. Y. Hayel, P. Maillé and B. Tuffin. Modelling and Analysis of Internet Pricing : Introduction and Challenges. *In Proceedings of the International Symposium on Applied Stochastic Models and Data Analysis (ASMDA)*, Brest, May 2005.
24. Y. Hayel and B. Tuffin. Pricing for Heterogeneous Services at a Discriminatory Processor Sharing Queue *In Proceedings of Networking 2005*, Lecture Notes in Computer Science, Springer, May 2005.
25. P. Maillé and B. Tuffin. An Auction-Based Pricing Scheme for Bandwidth Sharing with History-Dependent Utility Functions. *In Proceedings of the First International Workshop on Incentive Based Computing (IBC'05)*, IEEE CS Press, Compiègne, France, September 2005.
26. V. Demers, P. L'Ecuyer and B. Tuffin. A Combination of Randomized Quasi-Monte Carlo with Splitting for Rare-Event Simulation. *In proceedings of the 2005 European Simulation and Modelling Conference (ESM'2005)*, Porto, Portugal, October 2005.
27. H. Cancela, G. Rubino and B. Tuffin. New Measures of Robustness in Rare Event Simulation. *In Proceedings of the 2005 Winter Simulation Conference*, Orlando, FL, December 2005.
28. E. Altman, D. Barman, B. Tuffin and M. Vojnovic. Parallel TCP Sockets : Simple Model, Throughput and Validation. *In Proceedings of IEEE Infocom 2006*, Barcelona, Spain, 2006.
29. P. Maillé and B. Tuffin. How Many Parallel TCP Sessions to Open : a Pricing Perspective. *In Fifth International Workshop on Internet Charging and QoS Technology, ICQT'06*, ST Malo, France, Lecture Notes in Computer Science, 2004.

30. Y. Hayel, V. Ramos and B. Tuffin. Optimal Static Pricing of Reverse-Link DS-CDMA Multi-class Traffic. *In the proceedings of the 3rd International Conference on Quantitative Evaluation of SysTems (QEST)*, University of California at Riverside, USA, IEEE CS Press, September 2006.
31. B. Tuffin, P. L'Ecuyer and W. Sandmann. Robustness Properties in Simulations of Highly Reliable Systems. *In the Proceedings of RESIM 2006*, Bamberg, Germany, October 2006.
32. P. L'Ecuyer and B. Tuffin. Splitting with Weight Windows to Control the Likelihood Ratio in Importance Sampling. *In the Proceeding of the first VALUETOOLS Conference*, ACM Press, Pisa, Italy, October 2006.
33. Y. Hayel, G. Rubino, B. Tuffin and M. Varela. A New Way of Thinking Utility in Pricing Mechanisms : A Neural Network Approach. *In Proceedings of the 13th CLAIO (Congreso Latino-Iberoamericano de Investigacion Operativa)*, Montevideo, Uruguay, 2006.
34. P. L'Ecuyer, V. Demers and B. Tuffin. Splitting for rare-event simulation. *In Proceedings of the 2006 Winter Simulation Conference*, La Marina del Rey, CA, December 2006.
35. P. Maillé and B. Tuffin. Why VCG auctions can hardly be applied to the pricing of inter-domain and ad hoc networks. *In Proceedings of the 3rd EURO-NGI Conference on Next Generation Internet Networks, Design and Engineering for Heterogeneity (NGI 2007)*, Trondheim, Norway. May 21-23 2007.
36. L.M. Le Ny and B. Tuffin. Pricing a threshold-queue with hysteresis. *In Proceedings of the 18th IASTED International Conference on Modelling and Simulation (MS 2007)*, Montreal, Canada, May 30-June 1, 2007.
37. J. Blanchet, P. Glynn, P. L'Ecuyer, W. Sandmann, B. Tuffin. Asymptotic Robustness of Estimators in Rare-Event Simulation. *In Proceedings of the 2007 INFORMS Simulation Society (I-Sim) Research Workshop*, Fontainebleau, France, July 2007.
38. P. Maillé, B. Tuffin, Y. Xing and R. Chandramouli. Decentralized Learning for Pricing a RED Buffer. *Proc. of the 16th International Conference on Computer Communications and Networks (ICCCN'2007)*, Hawaii, USA, August 2007.
39. B. Tuffin, P. Choudhary, C. Hirel and K.S. Trivedi. Simulation versus Analytic-Numeric Methods : a Petri Net Example. *In Proceedings of the 2nd VALUETOOLS Conference*, ACM Digital Library, Nantes, France, October 2007.
40. E. Altman, R. El Azouzi, R. Marquez, D. Ros and B. Tuffin. Stackelberg Approach for Pricing Differentiated Services. *In Proceedings of the 2nd VALUETOOLS Conference*, ACM Digital Library, Nantes, France, October 2007.
41. P. L'Ecuyer, B. Tuffin. Effective Approximation of Zero-Variance Simulation in a Reliability Setting. *In Proceedings of the 2007 European Simulation and Modelling Conference (ESM'2007)*, St. Julian's, Malta, October 2007.
42. P.-T. de Boer, P. L'Ecuyer, G. Rubino, and B. Tuffin. Estimating the Probability of a Rare Event Over a Finite Horizon. *Proceedings of the 2007 Winter Simulation Conference*, IEEE Press, 2007.
43. Y. Hayel, V. M. Ramos, B. Tuffin. A Hierarchical Game for Uplink CDMA Transmissions with Random Active Users. *In Proceedings of the Seventh International Conference on Networking (ICN 2008)*, Pages 551-555, , Cancun, Mexico. IEEE Computer Society, 2008.
44. P. Maillé, B. Tuffin. Analysis of Price Competition in a Slotted Resource Allocation Game. *In Proceedings of IEEE Infocom 2008*, Phoenix, AZ, April 2008.

45. P. Maille, M. Naldi and B. Tuffin. Competition for migrating customers : a game-theoretic analysis in a regulated regime. In *Proceedings of IEEE Globecom 2008*, New Orleans, USA, December 2008.
46. P. L'Ecuyer and B. Tuffin, Approximate Zero-Variance Simulation. In *Proceedings of the 2008 Winter Simulation Conference*, IEEE Press, 2008.
47. H. Jung, B. Tuffin. Pricing for Heterogeneous Services in OFDMA 802.16 Systems. In *Proceedings of IEEE WONS (International Conference on Wireless On-demand Network Systems and Services)*, Snow Bird, Utah, USA, February 2009.
48. P. Maillé and B. Tuffin. Optimization of Transmission Power in Competitive Wireless Networks. In *Sixth International Workshop on Internet Charging and QoS Technology, ICQT'09*, Aachen, Germany, Lecture Notes in Computer Science, May 2009.
49. H. Le Cadre, M. Bouhtou and B. Tuffin. A Pricing model for a Mobile Network Operator sharing limited resource with a Mobile Virtual Network Operator. In *Sixth International Workshop on Internet Charging and QoS Technology, ICQT'09*, Aachen, Germany, Lecture Notes in Computer Science, May 2009.
50. H. Le Cadre, M. Bouhtou and B. Tuffin. Competition for Subscribers Between Mobile Operators Sharing a Limited Resource. *Proceedings of GameNets'09*, Istanbul, Turkey, May 2009.
51. Z. Kong, B. Tuffin, U.K. Kwok and J. Wang. Efficiency Analysis of Price Competition among WLAN Providers. In the *proceedings of ICC 2009*, Dresden, Germany, June 14-18, 2009.
52. H. Cancela, M. El Khadiri, G. Rubino and B. Tuffin. A Recursive Variance Reduction Technique with Bounded Relative Error of Communication Network Reliability Estimation. In the *proceedings of the 6th St.Petersburg Workshop on Simulation*, pages 703-708, Saint Petersburg, Russia, July 2009.
53. P. L'Ecuyer and B. Tuffin. Limiting Distributions for Randomly-Shifted Lattice Rules. In the *proceedings of the 6th St.Petersburg Workshop on Simulation*, pages 885-890, Saint Petersburg, Russia, July 2009.
54. H. Le Cadre, M. Bouhtou and B. Tuffin. Modeling Mobile Network Operator and Mobile Virtual Network Operator Dynamic Interconnexion Relations. *Proceedings of the 21st International Teletraffic Congress (ITC 21)*, Paris, France, September 2009.
55. P. Maille, M. Naldi and B. Tuffin. Price War with Migrating Customers. *17th Annual Meeting of the IEEE/ACM International Symposium on Modelling, Analysis and Simulation of Computer and Telecommunication Systems (MASCOTS 2009)*, IEEE Computer Society, London, UK, September 2009.
56. P. Maille, M. Naldi and B. Tuffin. Price War or Tacit Collusion : A Repeated Game Approach to Oligopoly. In *3rd International Workshop on Network Control and Optimization, NETCOOP'09*, Eindhoven, The Netherlands, Lecture Notes in Computer Science, November 2009.
57. P. Maille and B. Tuffin. Price War with Partial Spectrum Sharing for Competitive Wireless Service Providers. In *Proceedings of IEEE Globecom 2009*, Honolulu, USA, December 2009.
58. P. L'Ecuyer and B. Tuffin. On the Error Distribution for Randomly-Shifted Lattice Rules. In *Proceedings of the 2009 Winter Simulation Conference* Austin, TX, December 2009.

#### **G. Invited (keynote) international conferences and Tutorials**

1. B. Tuffin. Pricing schemes in Telecommunication networks. In *4th Latino-american days on theoretical economy (JOLATE)*, Mexico City, Mexico, 2002.

2. B. Tuffin. Introduction à la simulation d'événements rares. *In 9ème Atelier de Performances (AEP9)*, Aussois, France, Juin 2008.
3. G. Rubino and B. Tuffin. An Introduction to Monte Carlo Methods and Rare Event Simulation. *Tutorial of the 5th International Conference on Quantitative Evaluation of Systems (QEST)*. IEEE CS Press, Budapest, Hungary, September 2009.
4. B. Tuffin. Pricing in telecommunication networks : from congestion control and incentives design to competition among providers. *5th Lanti-Americ Networking Conference, LANC 2009*, Keynote talk, Pelotas, Brazil, September 2009.
5. B. Tuffin. Pricing in telecommunication networks : some issues and models. *3rd IFIP/IEEE International Workshop on Bandwidth on Demand and Federation Economics*, Keynote talk, Osaka, Japan, April 2010.

#### H. Other international conferences

1. H. Cancela, G. Rubino et B. Tuffin, Fast Monte Carlo Methods for evaluating Highly Dependable Markovian Systems. *Second International Conference on Monte Carlo and quasi-Monte Carlo Methods in Scientific Computing, Salzburg, Austria, July 1996*.
2. D. Ros and B. Tuffin. Charging in Packet Networks Using the Paris Metro Pricing Scheme. *In Optimization Days'03*, Montréal, 2003.
3. B. Tuffin. Some new research directions about hybrid Monte Carlo methods. *In Vth IMACS Seminar on Monte Carlo Methods MCM-2003*, Berlin, September 2003.
4. C. Lécot and B. Tuffin. Simulating Markov Chains with Quasi-Monte Carlo Methods. *In Vth IMACS Seminar on Monte Carlo Methods MCM-2003*, Berlin, September 2003.
5. G. Ökten, B. Tuffin. A Central Limit Theorem for a Hybrid-Monte Carlo Method. *Fifth International Conference on Monte Carlo and quasi-Monte Carlo Methods*, Juan-les-Pins, France, June 2004.
6. B. Tuffin. Coverage Function of Randomized Quasi-Monte Carlo Methods. *INFORMS Applied Probability Conference*, Ottawa, Canada, July 2005.
7. P. L'Ecuyer, C. Lécot and B. Tuffin. A New Randomized Quasi-Monte Carlo Approach for Markov Chains. *INFORMS Applied Probability Conference*, Ottawa, Canada, July 2005.
8. V. Demers, P. L'Ecuyer and B. Tuffin. Combining Randomized Quasi-Monte Carlo with Splitting for Rare-Event Simulation. *Sixth International Conference on Monte Carlo and quasi-Monte Carlo Methods*, Ulm, Germany, August 2006.
9. H. Cancela, P. L'Ecuyer, M. Lee, G. Rubino and B. Tuffin. Refinements of a path-based efficient algorithm for network reliability estimation in the rare event case. *In Proc. of Probability and Statistics in Science and Technology 2007*, Porto, Portugal, 2007.
10. H. Cancela, P. L'Ecuyer, M. Lee, G. Rubino and B. Tuffin. Combining Path-Based Methods, RQMC and Zero-Variance Approximations in Static Model Analysis. *In Seventh International Conference on Monte Carlo and quasi-Monte Carlo Methods*, Montreal, Canada, July 2008.
11. P. L'Ecuyer and B. Tuffin. Approximating zero-variance importance sampling in reliability settings. *In Efficient Monte Carlo : From Variance Reduction to Combinatorial Optimization A Conference on the Occasion of R. Y. Rubinstein's 70th Birthday*, Sandbjerg Estate, Sønderborg, Denmark 14-18 July 2008.
12. P. L'Ecuyer, J. Blanchet, B. Tuffin, P.W. Glynn. Asymptotic Robustness of Estimators in Rare-Event Simulation. *In the 7th International Workshop on Rare Event Simulation (RESIM 2008)*, Rennes, France, September 24-26 2008.

13. P. Maillé and B. Tuffin. Price War Among Telecommunication Providers. *1st Euro-NF Socio-Economics Workshop*, Athens, Greece, October 16-17, 2008.
14. P. Maillé, M. Naldi and B. Tuffin. Challenges in game-theoretic modeling of competition and regulation for migrating customers. *1st Euro-NF Socio-Economics Workshop*, Athens, Greece, October 16-17, 2008.
15. P. L'Ecuyer and B. Tuffin. Limiting Distributions for Randomly-Shifted Lattice Rules. *15th INFORMS Applied Probability Conference*, Cornell University, Ithaca, New York, U.S.A., July 2009.
16. P. L'Ecuyer and B. Tuffin. Limiting Distributions for Randomly-Shifted Lattice Rules. *IMACS MCM 2009 Conference*, Bruxelles, Belgium, September 2009.
17. F. Bastin, C. Cirillo, P. L'Ecuyer and B. Tuffin. Estimation strategies for complex discrete choice models. *12th Conference of the International Association for Travel Behaviour Research*, Jaipur, India, December 13-18, 2009.

#### I. National conferences

1. S. Collas and B. Tuffin. Creation of a Dynamic Model Language and Application of Monte Carlo Methods for the Reliability Analysis of Industrial Complex Systems. *In proceedings of  $\lambda\mu - 13$* , Lyon, Mars 2002.
2. Y. Hayel and B. Tuffin. Optimisation d'un modèle de tarification de l'Internet. *Dans 5ème congrès de la Société Française de Recherche Opérationnelle et d'Aide à la Décision (ROADEF'2003)*, Avignon, France, Février 2003.
3. P. Maillé and B. Tuffin. Mécanisme d'enchères au second prix pour l'allocation de bande passante dans les réseaux *Dans 5ème congrès de la Société Française de Recherche Opérationnelle et d'Aide à la Décision (ROADEF'2003)*, Avignon, France, Février 2003.
4. Y. Hayel and B. Tuffin. Tarification des réseaux à différenciation de services. *Dans Journées des Doctorants en Informatique et Réseaux (JDIR)*, Lannion, France, Novembre 2004.
5. P. Maillé and B. Tuffin. Enchères pour l'allocation de ressources réseaux. *Dans Journées des Doctorants en Informatique et Réseaux (JDIR)*, Lannion, France, Novembre 2004.
6. B. Tuffin. Entropie croisée pour la simulation d'événements rares, Journées MAS, Lille, France, Septembre 2006.

#### J. Submitted

1. P. Maillé and B. Tuffin. Price War in Heterogeneous Wireless Networks.
2. H. Le Cadre, M. Bouhtou and B. Tuffin. Modeling Consumers' Preference to Price Bundle Offers in Telecommunication industry Study for a Single Provider.
3. P. Maillé, P. Reichl and B. Tuffin. Of Threats and Costs : A Game-Theoretic Approach to Security Risk Management.
4. Hai Tran Hoang and B. Tuffin. Toward self-managed Inter-domain pricing : a discussion of possible approaches.
5. P. Maillé and B. Tuffin. Competition Among Providers in Loss Networks.
6. P. L'Ecuyer, D. Munger and B. Tuffin. Limit Error Distributions and Confidence Intervals for Randomly-Shifted Lattice Rules.
7. P. L'Ecuyer, G. Rubino, S. Samira and B. Tuffin. Approximation of Zero-Variance Importance Sampling for the Evaluation of Static Reliability Models.

8. H. Cancela, M. El Khadiri, G. Rubino and B. Tuffin. A Bounded Relative Error Estimator for the Static Communication Network Reliability Problem.
9. P. Maillé and B. Tuffin. On the interest of introducing randomness in ad-word auctions.
10. P. Reichl, B. Tuffin and R. Schatz. Economics of Logarithmic Quality-of-Experience in Communication Networks.
11. P. Maillé, B. Tuffin and J.M. Vigne. Economics of Technological Games Among Telecommunication Service Providers.

#### K. Other research reports

1. B. Tuffin, Improvement of Halton sequences distribution. PI IRISA N° 998, Mars 1996.
2. B. Tuffin, Réduction des bornes de l'erreur d'approximation des méthodes de quasi-Monte Carlo. PI IRISA N° 1133, Septembre 1997.

#### L. Misc.

1. B. Tuffin and P. Maillé, Auctioning for Bandwidth in Communication Networks, *ERCIM News No.57, Special Theme : Games Technology*, Pages 32-33, April 2004.
2. B. Tuffin, H. Cancela, P. Rodriguez. End-to-End Reliability-Dependent Pricing of Network Services. *International Conference on Industrial Logistics (ICIL'05), Poster Session*, Montevideo, Uruguay, February 2005.
3. P.W. Glynn and B. Tuffin. Guest editorial. Performance evaluation methodologies and tools. *Performance Evaluation*, Volume 65, Issues 11+12, Pages 787-788, November 2008.

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## Seminars and workshops

1. B. Tuffin, Méthodes de quasi-Monte Carlo et application aux fiabilités des réseaux. University of Marne la Vallée, June 1995.
2. B. Tuffin, Méthodes de quasi-Monte Carlo : suites efficaces et contrôle de l'erreur. IRMAR, University of Rennes 1, May 1996.
3. B. Tuffin, Méthodes de quasi-Monte Carlo : suites efficaces et contrôle de l'erreur. University of Orsay, May 1996.
4. B. Tuffin, Simulation accélérée des systèmes Markoviens hautement fiables. University of Bretagne Occidentale, February 1998.
5. B. Tuffin, Les méthodes de Monte Carlo et quasi-Monte Carlo en calcul scientifique, University of Chambéry, March 1998.
6. B. Tuffin, Charging for telecommunication network use. UNAM, Mexico City, October 2002.
7. B. Tuffin Méthodes de quasi-Monte Carlo et applications en télécommunications. GERAD, Montreal, May 2003.
8. B. Tuffin, Tarification des réseaux de communication. DIRO, University of Montreal, May 2003.
9. E. Altman, D. Barman, R. El Azouzi, D. Ros, B. Tuffin. Pricing Differentiated Services : A Game-Theoretic Approach. 3ème Journée Optimisation et Tarification, Versailles, France, October 2003.
10. Y. Hayel, D. Ros, B. Tuffin. Less-than-Best-Effort Services : Pricing and Scheduling. 3ème Journée Optimisation et Tarification, Versailles, France, October 2003.

11. P. Maillé and B. Tuffin. Multi-Bid Auctions for Bandwidth Allocation in Communication Networks. 3ème Journée Optimisation et Tarification, Versailles, France, October 2003.
12. E. Altman, E. El-Azouzi, D. Ros and B. Tuffin. Loss for Competing TCP/IP Connections. 2nd ARC TCP Workshop, ENS Paris, November 2003.
13. B. Tuffin. Quasi-Monte Carlo methods with applications in telecommunications. Ball State University (Indiana), Décembre 2003.
14. P. Maillé and B. Tuffin. A Survey on Multi-Bid Auctions. EuroNGI W.G.5.4 Workshop, INRIA Sophia-Antipolis, October 2004.
15. P. Maillé and B. Tuffin. Multi-Bid Auctions for Pricing Telecommunication Networks, Athens University of Economics and Business, November 2004.
16. H. Cancela, G. Rubino and B. Tuffin. Robustesse des techniques de Monte Carlo dans l'analyse d'événements rares. Université d'Amiens (France), Mai 2005.
17. B. Tuffin. Méthodes de quasi-Monte Carlo et applications en télécommunications. Université d'Amiens (France), Mai 2005.
18. H. Cancela, G. Rubino and B. Tuffin. Robustesse des techniques de Monte Carlo dans l'analyse d'événements rares. CRT, Université de Montréal, Juillet 2005.
19. B. Tuffin and G. Ökten. A hybrid Monte Carlo method with applications in finance. Advanced Finance Seminar, Florida State University, Tallahassee, September 2005.
20. B. Tuffin. Tarification des réseaux pour différencier les services. GERAD seminar, University of Montreal, February 2006.
21. B. Tuffin and P. Maillé. A decentralized learning algorithm when pricing a RED buffer. Internet Economics Dagstuhl seminar, Dagstuhl, Germany, March 2006.
22. B. Tuffin, P. L'Ecuyer and V. Demers. Rare event simulation. IFIP WG7.3 meeting, St Malo, June 2006.
23. B. Tuffin and P. Maillé. Analysis of Price Competition in a Slotted Resource Allocation Game. Séminar of CIRRELT, Montreal, November 2007.
24. B. Tuffin and P. Maillé. Analysis of Price Competition in a Slotted Resource Allocation Game. Workshop on Pricing and Revenue Management. France Telecom, December 2007.
25. B. Tuffin and P. Maillé. Analysis of Price Competition in a Slotted Resource Allocation Game. ECONTel COST Meeting, Sevilla, April 2008.
26. P. Maillé and B. Tuffin. Analysis of competition games among (wireless) operators. *EconTel Workshop*, Stockholm, Sweden, June 2009.
27. B. Tuffin. Pricing in telecommunication networks : from congestion control and incentives design to competition among providers. *INRIA - Bell Labs Workshop II : Fundamentals of Communications and Networking*, Rocquencourt, France, October 2009.
28. B. Tuffin. Rare event simulation. Séminaire du département de Mathématiques de l'Université de Bretagne Occidentale, Brest, February 2010.
29. P. Maillé and B. Tuffin. Competition among wireless operators. *WINEM open seminar*, Sophia-Antipolis, France, February 2010.
30. B. Tuffin. Advanced methods for rare event simulation. CIMPA School : Applied Mathematics and Engineering, Solis, Uruguay, March 2010.
31. B. Tuffin. Introduction à la simulation d'événements rares. Exemples d'application en sûreté de fonctionnement et évaluation des performances. Journée vérification et contrôle de systèmes stochastiques, Campus Ker Lann, 6 Avril 2010.

32. B. Tuffin. Game theory, pricing and incentives in networks, with applications. 3rd Euro-NF Summer School on Opportunistic Networking, Valence, Spain, June 28-July 2, 2010.

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## Grants for academic relationships

- *Coordinator of the PRIXNET ARC* : Internet pricing.  
INRIA's cooperative research action 2003-2004 with MISTRAL project-team at INRIA Sophia-Antipolis, the university of Versailles-St Quentin, France Telecom R&D and IBM.
- *Member of the TCP ARC* : Models and Algorithms for TCP/IP Networks . An INRIA's cooperative research action 2003-2004 with INRIA MISTRAL, PLANETE, TREC, RAP project-team, the EPFL (Lausanne) and France Telecom R&D.
- *Local coordinator of the l'ACI Sécurité informatique SURE-PATHS*.  
Research project 2003-2005 with the University of Versailles-St Quentin, and ID lab. at Grenoble.
- ECOS Sud (Uruguay) cooperation program 2004-2006 : *The Internet as convergent network* with the University de la republica at Montevideo (in collaboration with ENST Bretagne and the University of Paris 11).
- Member of the EuroNGI European Network of Excellence (NoE) (Design and Engineering of the Next generation Internet), Dec. 2003-Dec. 2006. Participation to activities :  
JRA.2.2 : Traffic management in a multi-provider context  
JRA.5.4 : Networks : optimization and control  
JRA.5.5 : Numerical and analytic methodologies  
JRA.6.2 : Payment and cost models for next Generation Internet
- Coordinator of AUCTIONS project of EuroNGI NoE, funded in 2005 on inter-domain auctions ; project in collaboration with the University of Versailles-St Quentin, Athens University of Economics and Business, the University of Rome 2 and the University of cantalabria.
- INRIA's 2005 research project with the USA : Hybrid Quasi-Monte Carlo methods and applications in finance and telecommunications, with Ball State University and Florida State University.
- Program FQNRT Québec/INRIA 2006 : on rare event simulation with the University of Montréal and HEC Montréal.
- *Co-coordinator of the RARE ARC* : Rare event simulation.  
INRIA's cooperative research action 2006-2007 with ASPI, MATHFI INRIA's project-teams, the CWI in the Netherlands, the University of Bamberg in Germany, EDF and the ENAC.
- *Member of the IFANY ARC* : Information Theory in telecommunication networks. An INRIA's cooperative research action 2006-2007 with INRIA MASETRO, HYPERCOM, TREC project-teams, EURECOM school, the EPFL (Lausanne) and the University of Cyprus.
- *Member of the ANR Télécommunications WINEM* : WIMAX Network Engineering and Multihoming.  
ANR project 2007-2009, in cooperation with Motorola, the GET (INT and ENST Bretagne), MAESTRO project-team at INRIA Sophia-Antipolis, the University of Avignon, the Eurecom institute and France Telecom R&D.

- *ISAT bilateral collaboration with the University of Auckland (New-Zealand) 2006-2007.*  
Work on pricing methods in a competitive market.
- INRIA Team-leader of the EuroFGI European Network of Excellence (NoE) (Design and Engineering of the Future generation Internet), a follow-up of EuroNGI, Dec. 2006-Dec. 2009.
- Member of CAP project (Competition Among Providers in the access network) within EuroFGI NoE, funded for a period of one year between 2007 and 2008, in collaboration with GET/ENST Bretagne, the University of Rome 2 and the University of Cantalabria.
- GDR ROTJER 2007-2008 : operations Research and Game Theory for communication networks.
- ECONTEL (EU COST Activity IS0605) : French national delegate and project coordinator.
- Head of associated-team MOCQUASIN : INRIA associated team with the University of Montreal. 2008-...  
Main topic : Monte Carlo and quasi-Monte Carlo simulation techniques. Application to rare event simulation. See [http://www.irisa.fr/dionysos/pages\\_perso/tuffin/MOCQUASIN/](http://www.irisa.fr/dionysos/pages_perso/tuffin/MOCQUASIN/)
- Team-leader for l'INRIA of European Network of Excellence (NoE) Euro NF (Design and Engineering of the Network of the Future) Jan. 2008- Dec. 2010.
- Member of PRECO project (Pricing and Regulation in Competitive Telecommunication Networks) within Euro-NF NoE unded for a period of one year between 2008 and 2009, in collaboration with TELECOM Bretagne and the University of Rome 2.
- Head of ANR CAPTURES project (Competition entre fournisseurs de telecommunication : rivalites et enjeux de gains) (2009-2012) in collaboration with France Telecom and TELECOM Bretagne.  
See <http://captures.inria.fr/>.
- Member of AMESA project (Analysis of MEchanisms for Sponsored search Auctions) within Euro-NF NoE unded for a period of one year between 2009 and 2010, in collaboration with Athens Univeristy of Economics and Business, ELECOM Bretagne, the University of Rome 2, and the CWI.

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## Other invitations/visits (above projects not included)

- May- Dec. 1999 : 8 months at *Duke University*.  
Subject : Simulation methods for the analysis of stochastic Petri nets. Implementation in SPNP (*Stochastic Petri Net Package*).
- August 2000 : 3 weeks at *Duke University*.  
Subject : Continuation of 1999's work.
- October 2002 : 1 week at *UNAM, Mexico City*.  
Subject : Internet pricing methods.
- May 2003 : 8 days at the computer science and operations research department of the *University of Montreal*.  
Subject : quasi-Monte Carlo methods and applications.
- Dec. 2003 : 1 week at *Ball State University, Muncie, Indiana*.  
Subject : Mixed Monte Carlo/Quasi-Monte Carlo simulation.
- Jan. 2004 : 1 week at *Duke University*.  
Subject : Methods for reliability analysis and SPNP software package.

- November 2004 : 1 week at *Athens University of Economics and Business (AUEB)*.  
Subject : Second price auctions for bandwidth sharing.
- July 2005 : 8 days at the computer science and operations research department of the *University of Montreal*.  
Subject : Efficient simulation of Markov chains by randomized quasi-Monte Carlo methods.
- November 2007 : 8 days at the *University of Montreal*.  
Subject : Rare event simulation and zero-variance estimator.
- Avril 2009 : 1week at FTW (Vienna, Austria), to work on network security economics.

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## Other invitations of peer researcher

- Christian Lécot, professor at the University of Savoie, 1 week, june 2001+ 1 semaine, juillet 2003.  
Subject : quasi-Monte Carlo methods.
- Elvio Accinelli, professor at Montevideo (Uruguay), 2 months, 2002.  
Subject : pricing telecommunication networks.
- Richard Marquez, University de Los Andes (Venezuela), 1 week, september 2003.  
Subject : control of TCP traffic by pricing.
- Pierre L'Ecuyer, professor at the University of Montréal, 15 days, March-April 2004.  
Subject : quasi-Monte Carlo methods for Markov chains simulation.
- Moshe Haviv, professor at the hebraic University of Jerusalem, 4 days, November 2004.  
Subject : Pricing and control in queues.
- Fernando Beltran, from the University of Auckland (New-Zealand), 20 days, June 2006.  
Subject : second price auctions with providers in competition.
- Pierre L'Ecuyer, professor at the University of Montréal, on a sabbatical year (mid july 2006-june 2007).  
Subject : quasi-Monte Carlo methods, and rare event simulation.
- Pieter de Boer, from the University of Twente, 2 months starting in February of 2007.  
Subject : rare event simulation.
- Peter Reichl, from FTW, Vienna, Austria, 1 month and a half, Summer 2008.  
Subjet : pricing communication networks.
- Peter Reichl, from FTW, Vienna, Austria, 1 month and a half, Summer 2009.  
Subject : network security economics.
- Ad Ridder (Amsterdam), 1 week, December 2009.  
Subject : rare event simulation by importance sampling.

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## Editorial activities/Organization of conferences

- Associate Editor : INFORMS Journal on Computing, since 2007.
- Associate Editor : Mathematical Methods of Operations Research, since November 2008.
- Associate Editor : ACM Transactions on Modeling and Computer Simulation, since July 2009.
- General Chair : Fifth International Workshop on Advanced Internet Charging and QoS technologies (ICQT'06), "Performance has its price", June 27, 2006, St Malo, France.

- Organization of the International Workshop on Rare Event Simulation, Nice, May 2007.
- TPC co-chair : 1st International Conference on Network Control and Optimization (NET-COOP'07), June 5-7, Avignon, France.
- Member of the steering committee of NET-COOP, 2007-....
- Vice-General Chair and local arrangement chair of the Second International Conference on Performance Evaluation Methodologies and Tools (Valuetools'07), October, Nantes, France.
- Guest editor of a special issue of Performance Evaluation Journal for selected papers from valuetools'07.
- Co-organization of the 2nd ARC INRIA's National Days, Rennes, October 1-2, 2007.
- Local organization Chair, 5th International Conference on the Quantitative Evaluation of SysTems (QEST'08), Saint-Malo, September 2008.
- Scientific Committee Chair, 7th International Workshop on Rare Event Simulation (RESIM'08), Rennes, September 2008.
- Guest editor of a special issue of ACM Transactions on Modeling And Computer Simulation on Rare Event Simulation (in preparation).
- Co-Chair : Sixth International Workshop on Advanced Internet Charging and QoS technologies (ICQT'09), May 15, 2009, Aachen, Germany.
- Co-guest editor of a special issue of Telecommunication Systems Journal on Socio-Economic Issues of Next Generation Networks, to appear at the beginning of 2011.

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## Program committees

- Fourth International Workshop on Advanced Internet Charging and QoS technologies (ICQT'04), "QoS has its price", September 29-October 1, 2004, Barcelona, Catalunya, Spain.
- "European Simulation and Modelling Conference" (ESM2005), October 24-26, 2005, University of Porto, Portugal.
- 5th IEEE International Symposium on Signal Processing and Information Technology (ISS-PIT'05), December 2005, Athens, Greece.
- Organizer of the invited session "Rare Events Simulation" at the Winter Simulation Conference, Orlando, USA, 2005.
- i-Society 2006, International Conference of Information Society, August 7-10 2006, Miami, USA.
- "European Simulation and Modelling Conference" (ESM2006), October 23-25, 2006, LAAS-CNRS Toulouse, France.
- 6th IEEE International Symposium on Signal Processing and Information Technology (ISS-PIT'06), August 2006, Vancouver, Canada.
- First International Conference on Performance Evaluation Methodologies and Tools (VALUE-TOOLS'06), October 11-13, 2006, Pisa, Italy.
- 4th Annual IEEE Consumer Communications and Networking Conference "Seamless Consumer Connectivity" (CCNC'07), January 11-13 2007, Las Vegas, Nevada.
- 16th IASTED International Conference on Applied Simulation and Modelling (ASM 2007), August 29-31, 2007, Palma de Mallorca, Spain.

- The 4th International Workshop on Grid Economics and Business Models (GECON 2007), August 28th, 2007, Rennes, France.
- "European Simulation and Modelling Conference" (ESM2007), October 22-24, 2007, St.Julians, Malta.
- 2nd International Conference on Performance Evaluation Methodologies and Tools (VALUE-TOOLS'07), October 23-25, 2007, Nantes, France.
- Co-organizer of the invited session "Game theory in communication networks" at the Roadef Conference, Clermont Ferrand, February 25-27, 2008.
- 2nd IEEE International Workshop on Bandwidth on Demand (BoD 2008) April 11, 2008, Salvador da Bahia, Brazil.
- 4th EURO-NGI Conference on Next Generation Internet Networks Design and Engineering for Heterogeneity (NGI'08), April 28-30, Krakow, Poland.
- 9ème Atelier en Évaluation de Performances, 1-4 Juin 2008, Aussois, France.
- 8th International Conference on Monte Carlo and Quasi-Monte Carlo Methods in Scientific Computing (MCQMC'08), July 7-11, 2008, Montréal, Canada.
- 17th International Conference on Computer Communications and Networks (ICCCN'08), August 4 - 7, 2008 St. Thomas U.S. Virgin Islands.
- The 5th International Workshop on Grid Economics and Business Models (GECON 2008), August 25-26, 2008, Las Palmas, Gran Canaria, Spain.
- 3rd International Conference on Performance Evaluation Methodologies and Tools (VALUE-TOOLS'08), October 13-18, 2008, Athens, Greece.
- "European Simulation and Modelling Conference" (ESM2008), October 27-28, 2008, Le Havre, France.
- 2nd IFAC Workshop on Dependable Control of Discrete Systems (DCDS'09), June 10-12, 2009, Bari, Italy.
- 5th EURO-NGI Conference on Next Generation Internet (NGI 2009). Aveiro, Portugal, June 22-24, 2009.
- The 6th International Workshop on Grid Economics and Business Models (GECON 2009), August 24, 2009, Delft, The Netherlands.
- 6th International Conference on the Quantitative Evaluation of SysTems (QEST) 2009, September 2009, Budapest, Hungary.
- 21st International Teletraffic Congress (ITC 21), September 15-17, 2009, Paris, France.
- 3rd IFIP/IEEE International Workshop on Bandwidth on Demand and Federation Economics, April 23, 2010, Osaka, Japan.
- 6th Euro-NGI conference on Next Generation Internet Networks (NGI 2010), June 2010, Paris, France.
- 8th International Workshop on Rare Event Simulation (RESIM'10), June 21-22 2010, Cambridge, England.
- 22nd International Teletraffic Congress (ITC 22), September 2010, Amsterdam, The Netherlands.
- 3rd Workshop on Economic Traffic Management (ETM), September 2010, Amsterdam, The Netherlands.

- IEEE International Conference on Communications (IEEE ICC 2011), June 5-9 2011, Kyoto, Japan.

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## Referee activities

- Journals : *ACM MONET*, *ACM SIGCOMM Computer Communication Review*, *ACM ToMaCS*, *ACM ToMS*, *Acta Arithmetica*, *Annals of Telecommunications*, *Applied Stochastic Models in Business and Industry*, *Automatica*, *Comptes-Rendus de l'Académie des Sciences*, *Computer Communications*, *Computer Networks*, *Concurrency and Computation : Practice and Experience*, *Discrete Event Dynamic Systems*; *Electronics and Telecommunications Research Institute (ETRI) Journal*; *Elsevier : Simulation Modelling, Practice and Theory*; *European Journal of Operational Research*; *IEEE JSAC*, *IEEE/ACM transactions on Networking*, *IEEE Transactions on Automatic Control*, *IEEE Transactions on Computers*, *IEEE Transactions on Software Engineering*, *IIE Transactions*, *Inform Journal on Computing*, *International Journal of Systems Science*, *Journal of Communications and Networks*, *Journal of Complexity*, *Journal of Parallel and Distributed Computing*, *Journal of Simulation*, *Mathematical and Computer Modelling*, *Operations Research*, *Operations Research Letters*, *Performance Evaluation*, *Queueing Systems : Theory and Applications (QUESTA)*, *SIAM Journal on Control and Optimisation*, *Simulation : Transactions of the Society for Modeling and Simulation International*, *Stochastic Models*, *Telecommunication Systems*.
- Conferences : *ACM Sigmetrics*; *Colloque Africain sur la Recherche en Informatique*; *IFIP Performance*; *International Computer Performance & Dependability Symposium*; *International Conference on Concurrency Theory*; *International Teletraffic Congress*; *Numerical Solution of Markov Chains*; *Workshop on Multiaccess, Mobility and Teletraffic for Wireless Communications*; *IEEE Conference on Decision and Control*; *IEEE INFOCOM*; *IEEE Symposium on Computers and Communications*; *Modeling and Optimization in Mobile, Ad Hoc and Wireless Networks*; *Monte Carlo and Quasi-Monte Carlo Methods in Scientific Computing*; *Performance Tools*; *Valuetools*; *Winter Simulation Conference*.

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## Softwares

- Library in C for generating low discrepancy sequences.
- SPNP (*Stochastic Petri Net Package*) : package for the modeling and analysis using stochastic petri nets. This package is managed by Duke University on used on more than 200 sites (universities and companies).

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## Relationships with industry and other grants

- *Sofreten* : astudy fo highly reliable non-Markovian systems by simulation.
- *Cril Telecom Software* : Coverage of CDMA algorithms in UMTS networks.
- *DGA* : security of high-speed networks (in collaboration with AQL, ENST Bretagne, SAGEM).
- *France Telecom* : Cifre contract (PhD thesis supervision) on pricing and revenue and resource management for an integrated telecommunication provider in the context of competition and convergence of services.

- Participation to the research action *SELF OPTIMIZING WIRELESS NETWORKS*, in the framework of the joint laboratory INRIA- Alcatel Lucent, for a PhD thesis titled “Evolution towards auto-configuration of pricing and resource planning” (2008-...).
- *Région Bretagne* : projet ARED SIMERTEL (*rare event simulation with applications in telecommunications*) (2008-2011).

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## Annex activities

- Member of the committee for incentive actions at the scientific council (COST) of INRIA : 2005- end of 2009.
- Member of the committee for continuing education of IRISA from 2000 to 2006.
- Co-responsible for the networks and systems seminar at IRISA from september 2002 to 2005.
- Corresponding member for the international relationships of ARMORand Dionysos project-teams.
- Member of IRISA’s post-doc committee, 2007.
- Reviewer for the Natural Sciences and Engineering Research Council of Canada (NSERC) and the Netherlands Organisation for Scientific Research (NWO).
- Substitute in the scientific committee of the “Pole Images et Reseaux” of Brittany region, Nov. 2009 - ...
- Member of the selection committee for an assistant professor at ENIB (Ecole Nationale d’Ingénieur de Brest), 2010.
- Member of INRIA Rennes’ post-doc committee, 2010.

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## Supervision of PhD thesis

- Patrick Maillé. *Application of game theory to Internet pricing*. Started 1/10/2002, defended in june 2005. Now assistant professor at Telecom Bretagne.
- Yezekael Hayel. *Sutdy of Internet pricing without resource reservation*. Started 1/10/2002, defended in november 2005. Now assistant professor at the Univeersity of Avignon.
- Arnaud Delenda. *Auction mechanisms for sharing Network resources*. Defended in June 2008. Now working for Hitvalue (<http://www.hitvalue.net/>)
- Hélène Le Cadre. *Tarifcation et gestion du revenu et des ressources d’un opérateur intégré de télécommunication dans un contexte de concurrence et de convergence des services*. Started Dec. 2006, defended in november 2009. Now post-doc.
- Sagga Samira. *rare event simulation with applications in telecommunications*. Starting in November 2008.
- Hai Tran Hoang. *Evolution toward the auto-configuration of resources pricing and planning*. Starting in December 2008.
- Jean-Marc Vigne. *Analysing competition among providers in telecommunication networks*. Starting the 01/10/2009. Co-supervised with Patrick Maillé (Telecom Bretagne).

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## Membership of other PhD defense panels of judges

- V. Ramos. Robust and reliable transmission of multimédia on the Internet. University of Nice-Sophia-Antipolis, December 2004, examiner.
- F. Robledo. GRASP heuristics for Wide Area Network design. University of Rennes 1, February 2005, examiner.
- J. Nasreddine. Radio resource allocation in UMTS systems. University de Rennes 1, March 2005, examiner.
- Hamza Dahmouni. Reconnaissance des services, caractérisation du trafic et évaluation de performances dans les réseaux mobiles multiservices. ENST Bretagne, March 2007, examiner.
- Jérôme Lelong. Algorithmes stochastiques et options Parisiennes. Cermics, École Nationale des Ponts et Chaussées, september 2007, examiner.
- Nicolas Bonneau. Mécanismes multi-utilisateurs centralisés et décentralisés pour les communications sans fil. Universié de Nice-Sophia-Antipolis, September 2007, rapporteur.
- Kamal Gakhar. Ingénierie de la QoS sur une plaque radio mixte IEEE 802.16/IEEE 802.11. ENST Bretagne, September 2007, examiner.
- Gary Hardy. Graphes stochastiques et Diagramme de Décision Binaire : Applications en fiabilité des réseaux. Université de Picardie, December 2007, rapporteur.
- Hélia Pouyllau. Algorithmes distribués pour la négociation de contrats de Qualité de Service dans les réseaux multi-domaines. Université de Rennes 1, December 2007, examiner.
- Matthias Roggendorf. Dynamic pricing of wireless network resources in a competitive provider setting. University of Auckland Business School, January 2008, external examiner.
- Dinesh Kumar. Analyse Stochastique de Réseaux sans Fil et Modélisation des Performances en temps réel dans les Réseaux Cablés. Universié de Nice-Sophia-Antipolis, November 2008, rapporteur.
- Chahinez Hamlaoui. Modèles et algorithmes pour la gestion économique des ressources dans les réseaux interdomaines vace garanties de QoS. Université de Versailles-St Quentin, Février 2009, rapporteur.
- Gaoning He. A Game-Theoretical Approach to resource Allocation in Wireless Networks. Eurcom, January 2010, rapporteur.
- Octave Boussaton. Application de la théorie des jeux à l'optimisation du routage réseau - solutions algrithmique. LORIA, Février 2010, rapporteur.

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## Supervision of post-doc

- Abhijit Datta Banik. Importance Splitting Simulation for Rare Event Analysis. From 15/12/2006 to 31/07/2007.

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## Supervision of Internships

- M. Logue, Master of Belfast University. Simulation of highly reliable systems by Monte Carlo with importance sampling, 1995.
- M. Ouarraou, master in applied mathematics, University of Rennes 1. Measurements of quality of service in the Internet, 2001, 50%.

- Y. Hayel. Internet Pricing models. Master of computer science, University of Rennes 1, 2002.
- M. Delignon. Security modeling with loss networks, master in applied mathematics, University of Rennes 1, 2002, 50%.
- P. Rodriguez, Reliability and pricing, Master of the Univeristy de la republica, Montevideoo, 2003.
- M. Andriamady. Pricing ad hoc networks. Master of computer science, University of Rennes 1, 2004.
- N. El Khatib. Perturbed quasi-Monte Carlo methods. Master in applied mathematics, Université of Savoie, 2004.
- J. Hakyung. Pricing Wimax. PhD student, School of Computer Science and Engineering, Seoul National University, 2007.
- D. Lee Matias, Monte Carlo and quasi-Monte Carlo methods for estimating the reliability of static models. Master , Universidad Nacional de Cordoba, Argentina, 2007.
- K. Zhen. Pricing networks in a concurrential environment. Application to WIFI and WIMAX. PhD student in Computer Science, The University of Hong Kong, 2007.
- D. Ferre. Simulation d'événement rares. Mastère Recherche en Mathématiques, Université de Rennes 1, 2008.
- P. Pilotti. Competition on price and capacity among telecommunication service providers. Master, University of Rosario (Argentina), 2008.
- J.M. Vigne. Multihoming in a competitive telecommunication environnement. Ingeneering school Telecom Bretagne, 2009.

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## Teaching activity

- Co-chair of Networks and Systems track of Computer Science Master in Rennes : 2007-2008.
- Undergraduate level :
  - \* Arithmetic and polynoms (1×24 hours)
  - \* Real analysis (1×40 heures+ 1×36 hours)
  - \* real analysis for physics (1×33 hours)
  - \* Probability (3×30 hours)
  - \* Probability for biologists (3×12 hours)
  - \* Analysis (5×34 hours).
- Graduate level :
  - \* Statistics and data analysis, Bacchelor in Mathematics (1×15 hours)
  - \* SAS software, Bacchelor in Mathemiatics (1×15 hours)
  - \* Class of queuing systems, DIIC (enginereeing degree) (1×16 hours)
  - \* Class of Stock management, MIAGE-IUP2 degree(2×16 hours)
  - \* Class of queuing systems (computer science master) (7×18 hours)
  - \* Class of probability simulation (computer science master) (2×18 hours)
  - \* Class of applied probability and statistics (computer science master, 1st year) (2×12 hours)
  - \* Class of Performance Evaluation (computer science master, 2nd year) (3×6 hours)
- Class at CNAM, mathematics for computer science (3×21 hours)
- Class at CNAM, mathematics for computer science, by Internet (4 years).