

Ana BUŠIĆ

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Curriculum vitæ

Professional Experience

- **2009 -** : **Research Assistant**, INRIA - Ecole Normale Supérieure, Paris, France.
- **2008 - 2009: Post-Doctoral position**, LIAFA, CNRS and Université Paris 7.
- **2007 - 2008: Post-Doctoral position**, INRIA Grenoble - Rhône-Alpes.
- **August - September 2007: Research visit**, Carnegie Mellon University.
- **2006 - 2007: Attaché Temporaire d'Enseignement et de la Recherche** (one year research/teaching faculty position), Université de Versailles Saint-Quentin.

Education

- **2003 - 2007: PhD in Computer Science**, PRiSM, Université de Versailles Saint-Quentin, Advisor: Prof. Jean-Michel FOURNEAU. Defended: July 2007.

Thesis: Stochastic comparison of Markov models: an algorithmic approach and its applications in reliability and performance evaluation.

http://www.prism.uvsq.fr/~abusic/PhDthesis/busic_these.pdf
- **2002 - 2003: DEA Mathématiques – Informatique** (Master degree), Université de Versailles St-Quentin. Thesis: Qualitative simulation of metabolic networks. Advisor: Prof. Jean-Michel FOURNEAU.
- **1996 - 2002: B.S. in Mathematics**, Department of mathematics, University of Zagreb, Croatia. Option: mathematical statistics and computer science.

Research interests

- Bounding techniques for Markov chains: stochastic orderings, Markov reward processes. Algorithms for large Markov chains: chains with a specific structure, aggregation techniques, censored Markov chains. Analysis of underspecified Markov chains.
- Discrete event systems: coupling techniques, perfect sampling of systems with non-monotone events; stability in stochastic networks, cellular automata.
- Performance evaluation of communication networks: optical networks, end to end delay bounds.

Publications

Journals

- [1] M. Ben Mamoun, A. Busic, N. Pekergin. *Generalized class C Markov chains and computation of closed-form bounding distributions*. Probability in the Engineering and Informational Sciences. Cambridge University Press, 21(2):235-260, 2007.

International conferences with selection committee and proceedings

- [2] A. Busic, B. Gaujal, J.-M. Vincent. *Perfect Simulation and Non-monotone Markovian Systems*. 3rd International Conference on Performance Evaluation Methodologies and Tools (Valuetools'08), October 2008, Athens, Greece.
- [3] A. Busic, J.-M. Fourneau. *Stochastic Complement and Strong Stochastic Bounds Based on Algebraic Properties*. 5th European Performance Engineering Workshop (EPEW 2008), September 2008, Palma de Mallorca, Spain. LNCS 5261, Springer-Verlag, pp. 227-241.
- [4] A. Busic, T. Czachorski, J.-M. Fourneau and K.Grochla. *Level Crossing Ordering of Markov Chains: Computing End to End Delays in an All Optical Network*. 2nd International Conference on Performance Evaluation Methodologies and Tools (Valuetools'07), October 2007, Nantes, France.
- [5] A. Busic, N. Pekergin. *Closed Form Absorption Time Bounds*. 4th European Performance Engineering Workshop (EPEW 2007), September 2007, Berlin, Germany. LNCS 4748, Springer-Verlag, pp. 33-47.
- [6] D. Barth, A. Busic, J.-M. Fourneau, D. Nott, F. Quessette, S. Rousseau. *Guaranteeing burst routing in the ROMEO optical network*. In Proceedings of Asia-Pacific Optical Communications 2007 (APOC'07), Wuhan, China. SPIE. (Invited.)
- [7] A. Busic, M. Ben Mamoun, J.-M. Fourneau. *Modeling Fiber Delay Loops in an All Optical Switch*. In Proceedings of the Third international Conference on the Quantitative Evaluation of Systems (QEST'06), pp. 93-102, September 2006, IEEE Computer Society.
- [8] M. Ben Mamoun, A. Busic, J.-M. Fourneau, N. Pekergin. *Increasing convex monotone Markov chains: Theory, algorithm and applications*. Markov Anniversary Meeting, June 2006, Charleston, SC, USA. Boson Books, pp. 189-210.
- [9] A. Busic, J.-M. Fourneau. *Bounds based on lumpable matrices for partially ordered state space*. In Proceedings of the 2006 Workshop on Tools For Solving Structured Markov Chains, (SMCtools '06), vol. 201. ACM Press.
- [10] A. Busic, J.-M. Fourneau, D. Nott. *Deflection Routing on a Torus is Monotone*. In: Second Multidisciplinary International Symposium on Positive Systems : Theory and Applications (POSTA06), August 2006, Grenoble, France. LNCIS 341, pp. 161-168, Springer.
- [11] A. Busic, J.-M. Fourneau, N. Pekergin. *Worst Case Analysis of Batch Arrivals with the Increasing Convex Ordering*. 3rd European Performance Engineering Workshop (EPEW 2006), June 2006, Budapest, Hungary. In: A. Horváth and M. Telek (Eds.): EPEW 2006, LNCS 4054, Springer-Verlag, pp. 196-210.
- [12] A. Busic, J.-M. Fourneau. *Bounds for Point and Steady-State Availability: An Algorithmic Approach Based on Lumpability and Stochastic Ordering*. 2nd European Performance Engineering Workshop (EPEW 2005), September 2005, Versailles, France. In: M. Bravetti et al. (Eds.): EPEW 2005 and WS-FM 2005, LNCS 3670, Springer-Verlag, pp. 94-108.

- [13] A. Busic, J.-M. Fourneau. *A Matrix Pattern Compliant Strong Stochastic Bound*. Modelling and Performance Evaluation for Quality of Service in Next Generation Internet, January 2005, Trento, Italy. In: M. Papazoglu and K. Yamazaki (eds.), Applications and the Internet SAINT 2005 Workshops. IEEE Computer Society, pp. 256-259.

Other

- [14] A. Busic, J.-M. Fourneau. *Bounding transient and steady-state dependability measures through algorithmic stochastic comparison*. SIGMETRICS Perform. Eval. Rev. 34(2):11-12, 2006. (Extended abstract of a poster presented at Performance 2005).
- [15] I. von Vliegen, A. Busic, A. Scheller-Wolf, G.-J. van Houtum. Optimization of stock levels for service tool inventory. Manufacturing and Service Operations Management conference (MSOM 2008). University of Maryland Robert H. Smith School of Business, June 5-6, 2008.
- [16] V. Bertin, A. Busic, B. Gaujal, J.-M. Vincent. Can we use perfect simulation for non-monotonic Markovian systems? Extended abstract. ROADEF 2008, Clermont- Ferrand, France, 25-27 February 2008.

Working papers

- [17] A. Busic, I. Vliegen, A. Scheller-Wolf. *Comparing Markov chains: Combining aggregation and precedence relations applied to sets of states*.
<http://hal.archives-ouvertes.fr/hal-00361430/en/>
- [18] I. Vliegen, A. Busic, A. Scheller-Wolf, G.-J. Van Houtum. *Optimization of stock levels for service tool inventory*.
- [19] A. Busic, B. Gaujal, F. Pin, J.-M. Vincent. *Perfect Sampling of Piece-wise Space Homogeneous Markov Chains*.
- [20] A. Busic. *Level-crossing ordering of non skip-free Markov chains*.

Seminar talks and presentations

(other than conferences)

Workshops: Workshop on Quantitative Models for Production and Communication Networks, “Perfect sampling of non-monotone Markov chains”, TU/e and EURANDOM, January 09. 9ième Atelier en Evaluation de Performances, “Sur la structure de graphe d’une borne stochastique”, Aussois 1-4 June 08. Second EuroNGI Workshop on New Trends in Modelling, Quantitative Methods and Measurements (WP IA.8.1), “Bounding transient and steady-state dependability measures through algorithmic stochastic comparison”, November 05, Aveiro, Portugal.

Seminar talks: AESOP group at Imperial College London, November 08. LIP, Ecole Normale Supérieure de Lyon, October 08. LACL, Paris 12, March 08. EURANDOM, Eindhoven, January 08. LIG, Grenoble, November 07. SQUALL talk (2 times), Carnegie Mellon University, Pittsburgh, PA, Summer 07.

Presentations in meetings of national projects: French ANR Surepaths (October 05, October 04); French ANR CheckBound (October 08).

Participation to research projects

- European project: *EuroNGI (Next Generation Internet)*.
<http://eurongi.enst.fr>
- National project: *SurePaths*, ACI sécurité informatique.
Members: IRISA (Rennes), ID (Grenoble) and PRiSM (Versailles).
<http://www-id.imag.fr/surepaths/>
- National project: *Simulation et Monotonie Stochastique en évaluation de performances (SMS)*, Projet Blanc 2005. Members: LIG (Grenoble) and PRiSM (Versailles).
- National project: *Checkbound*, ANR-06-SETI-002
Members: INT (Evry), LAMSADE (Paris-Dauphine), Marin Mersenne (Paris 1), LIG (Grenoble) and PRiSM (Versailles)
<http://www.lamsade.dauphine.fr/checkbound/>

Teaching

[TD (Travaux Dirigés) = small section classes]

- **2006 – 2007 :**
 - Simulation and experiments control, Master, 1st year (36h TD)
 - Introduction to cryptography and encoding, Licence, 2nd year (main lecturer: 18h lectures and 36h TD)
- **2005 – 2006 :**
 - Simulation and experiments control, Master, 1st year (18h TD)
 - Introduction to cryptography and encoding, Licence, 2nd year (36h TD)
 - Advanced C programming, Licence, 2nd year (12h TD)
- **2004 – 2005 :**
 - Introduction to computer science I, Licence, 1st year (30h TD)
 - Introduction to computer science II, Licence, 1st year (30h TD)
- **2003 – 2004 :**
 - Java programming I, DEUG, 1st year (22h TD)
 - Java programming II, DEUG, 1st year (44h TD)

Other

- **June 2008:** Member of organization committee. 9ième Atelier en Evaluation de Performances, Aussois 1-4 juin 2008. <http://aep9.imag.fr/>
- **2002 – 2003:** Bourse du Gouvernement Français (French Government scholarship for foreign students)
- **1992 – 1996:** Competitions in mathematics. Best result: 3rd place (2nd award) at national level (Croatia)