

Sasha Rubin

Curriculum Vitae

November 2012

– Personal Data –

Date of Birth 16 February 1976
Citizenship New Zealand
Address IST Austria
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– University –

Postdoctoral

3.2012 – present: Postdoctoral Researcher, IST Austria and TU Vienna, Austria.

5.2011 – 8.2011: Visiting Researcher, Department of Computer Science, Tel Aviv University.

2.2010 – 5.2010: Visiting Lecturer, Department of Mathematics, University of Cape Town.

08.2008 – 12.2009: Visiting Assistant Professor, Department of Mathematics, Cornell University.

12.2005 – 02.2008: Honorary Research Fellow in the Department of Computer Science, University of Auckland. Supported by a New Zealand Science and Technology Postdoctoral Fellowship.

PhD – Mathematics and Computer Science

1999 – 2004: University of Auckland, New Zealand.

Supervisor: Bakhadyr Khoussainov

Thesis Title: Automatic Structures

Vice-chancellor's prize for the best doctoral thesis in the Faculty of Science, 2004.

Montgomery memorial prize in logic from the Department of Philosophy, 2004.

MSc – Mathematics

1997 – 1998: University of Auckland, New Zealand.

Mathematics and Computer Science (first class)

BSc – Mathematics and Computer Science

1994 – 1996: University of Cape Town, South Africa.

Mathematics and Computer Science

– Summary of Research Interests –

My work studies the descriptive power of automata theory and mathematical logic for describing mathematical structures. Concretely, I have worked in the area of automatic structures, verification, and in finite model theory. I am currently working on the analysis of distributed systems and algorithms using logical and automata-theoretic methods.

– Research Activities –

Invited Talks

Workshop on *Finite and Algorithmic Model Theory* Les Houches (05.2012), Annual meeting of CNRS SIG on *Computational Model Theory* Bordeaux (06.2008), Workshop *Algorithmic-Logical Theory of Infinite Structures* Dagstuhl (10.2007), Newton Institute programme *Logic and Algorithms* workshop on *Finite and Algorithmic Model Theory* Durham (01.2006)

Recent research visits

Lukasz Kaiser, Universit Paris Diderot, Paris (10.2011), Automata theory and applications, IMS programme, Singapore (09.2011), Aniello Murano, Universit degli Studi di Napoli Federico II., Napoli (07.2011).

Refereed

Journals

Journal of Symbolic Logic, Logical Methods in Computer Science, Central European Journal of Mathematics, Information and Computation, Journal of Logic and Computation, Theory and Practice of Logic Programming, Handbook of Model Checking

Conferences

LICS, STACS, FoSSaCS, FSTTCS, CSL, CiE, LATA

Publications (18)

Book chapters (2)

Automatic Structures in Automata: From mathematics to applications, editor J.E. Pin, to be published by EMS.

Automata based presentations of infinite structures with V. Bárány and E. Grädel, in *Finite and Algorithmic Model Theory*, J. Esparza, C. Michaux, and C. Steinhorn, Eds., Series: London Mathematical Society Lecture Note Series (No. 379), 1 – 76, 2011.

LICS Proceedings (4)

Interpretations in trees with countably many branches with A. Rabinovich, 551 – 560, 2012.

Automatic Structures: Richness and Limitations, with B. Khoussainov, A. Nies and F. Stephan, 44 – 53, 2004.

Automatic Partial Orders, with B. Khoussainov and F. Stephan, 168 – 177, 2003.

Some Results on Automatic Structures, with B. Khoussainov and H. Ishihara, 235 – 244, 2002.

STACS Proceedings (3)

Cardinality and counting quantifiers on omega-automatic structures, with V. Bárány and L. Kaiser, 2008.

Order invariant MSO is stronger than counting MSO, with T. Ganzow, 2008.

Definability and Regularity in Automatic Structures, with B. Khoussainov and F. Stephan, 440–451, 2004.

CAV Proceedings (1)

Verifying ω -regular Properties of Markov Chains, with D. Bustan and M.Y. Vardi, 16th International conference on Computer Aided Verification, 189 – 201, 2004.

Other conferences (1)

A Myhill-Nerode Theorem for Automata with Advice with A. Kruckman, J. Sheridan and B. Zax, *GandALF 2012*.

Journals (7)

Alternating Traps in Parity Games with P. Phalitnonkiat, A. Grinshpun, A. Tarfulea, *accepted to Theoretical Computer Science*.

Automata presenting structures: A survey of the finite-string case, The Bulletin of Symbolic Logic, Volume 14, Issue 2, 2008, 169-209.

Automatic Structures: Richness and Limitations, with B. Khoussainov, A. Nies and F. Stephan, Logical Methods in Computer Science, Vol 3, 2007.

Automatic linear orders and trees, with B. Khoussainov and F. Stephan, ACM Transactions on Computational Logic, 6(4), 675 – 700, 2005.

Automatic Structures - Overview and Future Directions, with B. Khoussainov, Journal of Automata, Languages and Combinatorics, 8(2), 287 – 301, 2003.

Graphs with Automatic Presentations over a Unary Alphabet Journal of Automata, Languages and Combinatorics, 6(4), 467 – 480, 2001.

Finite Automata and Well Ordered Sets, New Zealand Journal of Computing, 7(2), 39 – 46, 1999.

– Supervision/Teaching –

Supervision

2012: Three month undergraduate research intern
IST Austria

2012: Three month rotation project for PhD student
IST Austria

2009: Summer research experience for undergraduates (REU)
Cornell University, Department of Mathematics

Topic 1: Parity games.

Topic 2: Automatic Structures in the presence of advice.

Teaching

University of Cape Town, Department of Mathematics

2010: Logic and computation, Stage 3.

Cornell University, Department of Mathematics

Fall 2009: Logical definability and Random graphs, Graduate course.

2008/2009: Calculus for Engineers, Stage 1.

University of Auckland, Department of Computer Science
2007: Discrete Structures in Mathematics and Computer Science, Stage 2.
Mathematical Foundations of Software Engineering, Stage 2.

18th European Summer School in Logic, Language and Information, University of Malaga, 2006
Five day advanced course ‘Logic and computation in finitely presentable infinite structures’ with V. Goranko.

University of Auckland, Department of Computer Science
2003: Introduction to Formal Verification, Stage 4.
2002: Automata Theory, Stage 3.

– References –

Erich Grädel

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Bakhadyr Khoussainov

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Moshe Y. Vardi

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Helmut Veith

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Maria Terrell (teaching reference)

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