Sasha Rubin – Brief Curriculum Vitae, December 2012

Contact

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University

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

Visiting Lecturer (2.2010 – 5.2010)
Department of Mathematics, University of Cape Town, South Africa.

Visiting Assistant Professor (08.2008 – 12.2009)
Department of Mathematics, Cornell University, USA.

Honorary Research Fellow (12.2004 – 02.2008)
Department of Computer Science, University of Auckland, New Zealand.
Supported by New Zealand Science and Technology Postdoctoral Fellowship.

PhD Mathematics and Computer Science (2004)
University of Auckland, New Zealand.
Supervisor: Bakhadyr Khoussainov
Title: Automatic Structures
Awards: Vice-chancellor's prize for the best doctoral thesis in the Faculty of Science, and Montgomery memorial prize in logic from the Department of Philosophy.

Research Summary

I work in a branch of theoretical computer science that uses mathematical logic to study computation. My time is spent solving mathematical problems, often with a small group of people passionate about the same problems, writing and presenting these results to the academic community in tier 1 conferences (eg. LICS) and journals (eg. BSL). I have supervised three groups of undergraduate research that have led to publications. I have served as referee for journals and conferences in my field and have given a number of invited talks.

Writing

I take great pride in my writing. I have written three surveys of my field, each for a different audience (logicians, computer scientists, mathematicians).

Selected Publications

Surveys

Automatic Structures in *Automata: From mathematics to applications*, J.E. Pin, Ed., 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 (379), 1 – 76, 2011.

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

Undergraduate supervision

How to travel between Languages with S. Chaubal, K. Chatterjee, submitted.

A Myhill-Nerode Theorem for Automata with Advice with A. Kruckman, J. Sheridan and B. Zax, *GandALF*, 238 – 246, 2012.

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

Teaching

I have taught at the undergraduate and postgraduate level. My goal as a teacher is to guide students through the material (eg. I point out which ideas are fundamental and which are technicalities), show students how the material is relevant to their degree, and help students think deeply. I regularly self-evaluate by reflecting on my lectures and engaging colleagues — my aim is to discover good teaching principles. For instance, I have learned to employ questions which encourage students to express themselves clearly and internalise the material, eg. 'can anyone help A with her answer?', 'can you explain B's idea to me?', 'what do you mean by X?', 'are you sure?'.