Marcin Kotowski

Personal Data

Date of Birth: 18 December 1987
E-mail: marcin.kotowski1@gmail.com

Academic Interests

– **geometric group theory, discrete probability, spectral graph theory**

Education

2013 – PhD program in mathematics, University of Toronto
advisor: Bálint Virág

2011 – 2013 PhD program in Quantum Information, University of Waterloo (Department of Combinatorics & Optimization and Institute for Quantum Computing) (discontinued)

2006 – 2011 M. Sc. in Mathematics at University of Warsaw
Faculty of Mathematics, Informatics and Mechanics
studied mathematics, physics and computer science in an interdisciplinary program at College Of Inter-Faculty Individual Studies In Mathematics and Natural Sciences
advisor: Piotr Przytycki

Research visits

February 2014 *1 month research visit at IHP trimester on random walks and asymptotic geometric of groups, Paris*

September 2012 *research visit at Alfred Renyi Institute of Mathematics, Budapest*
invited by Miklos Abert, worked on geometric group theory

Undergraduate research experience

2010 – 2011 *Random groups and Property (T): Żuk's theorem revisited*, M. Sc. thesis in mathematics
supervised by Prof. Piotr Przytycki
proved a theorem attributed to A. Żuk, characterizing Property (T) for random groups in terms of spectral graph theory

March – April 2011 *research fellowship at Institut de Ciències Fotòniques, Barcelona*
supervised by Prof. Maciej Lewenstein
worked on the relation between tight Bell inequalities and Unextendible Product Bases

June – August 2010 *research fellowship at Weizmann Institute of Science, Rehovot*
supervised by Prof. Vered Rom-Kedar
worked on numerical and analytical properties of Fermi acceleration in 3-dimensional chaotic billiards using tools from dynamical systems theory

July – August 2009 *research fellowship at Center for Theoretical Physics of the Polish Academy of Sciences, Warsaw*
supervised by Prof. Marek Kuś
worked on characterizing nonclassical correlations in multiparticle systems using methods of Lie-group representation theory and generalized coherent states

Publications

2013 *Random groups and Property (T): Żuk's theorem revisited*, M. Kotowski, M. Kotowski, arXiv:1106.2242, accepted to Journal of London Mathematical Society

2012 *Tight Bell inequalities with no quantum violation from qubit unextendible product bases*, Remigiusz Augusiak, Tobias Fritz, Marcin Kotowski, Michał Kotowski, Marcin Pawłowski, Maciej Lewenstein, Antonio Acín, arXiv:1112.3238, Phys. Rev. A 85, 042113

2010 *Universal nonlinear entanglement witnesses*, M. Kotowski, M. Kotowski, M. Kuś, arXiv:1003.0210, Phys. Rev. A 81, 062318

Expository and popular articles

2010 *Jak wyznaczyć liczbę pi za pomocą zderzeń* (in Polish, "How to estimate pi using collisions"), M. Kotowski, M. Kotowski, Delta 10/2010

2013 *Hipoteza Kakeyi* (in Polish, "Kakeya conjecture"), M. Kotowski, M. Kotowski, Delta 4/2013

Other activities

April 2012 taught a short course on spectral graph theory and expanders at the University of Warsaw

2012 – Co-organizer of Offtopicarium, an "unconference"-style event for PhD students, social activits, entrepreneurs, programmers etc.

2010 – 2011 coorganizing a student seminar of Mathematics Students Association in analysis, geometry and probability (University of Warsaw)
topics covered: convex geometry, probability on groups, spectral graph theory

2010 – 2011 Member of Polish Mathematical Olympiad's Warsaw regional comitee,

2009 – Volunteering for Polish Children's Fund as a tutor at scientific workshops for gifted high school students; taught or co-taught courses on:
Combinatorics of Integer Partitions (2013)
Random Walks and Electrical Networks (2011)
Quantum Algorithms (2010)
Automata Theory (2009)

2007 – Co-organizer of Scientific Summer Workshops, aimed at exceptional high-school students interested in mathematics, computer science and physics; taught or co-taught courses on:
Finite Field Combinatorics (2012)
The Probabilistic Method (2011)
Information Theory (2010)
Introduction to Quantum Mechanics (2009)
Logic and Computation (2008)
Lambda Calculus (2007)

2006 – 2011 member of the Physics Students Club of the University of Warsaw (SKFiz UW)

2006 – 2011 member of the Mathematics Students Association of the University of Warsaw (KPM UW), president 2009-2011

Workshops and conferences attended

January 2014	Random Walks on Groups, Paris
May 2013	Geometric Group Theory Student Workshop, Będlewo
June 2012	Conference on Graphs and Analysis, Princeton
December 2011	Quantum Information Processing 2012, Montreal
December 2011	Quantitative Geometry in Computer Science, MSRI, Berkeley
October 2011	Quantum Information: Codes, Geometry and Random Structures, Montreal
June 2011	Modern Graph Theory with Applications to Geometric Group Theory, Będlewo
April 2011	Spring School on „Limits of finite graphs", Leipzig
October 2010	International Conference on Quantum Information and Quantum Computation, Stockholm
May 2010	Spring School in Dynamical Systems 2010, Będlewo
April 2010	9th Student Physics Conference, Brenna
September 2009	summer scientific school of Mathematics' Students Association of the University of Warsaw, Małe Ciche k. Zakopanego
July 2009	Geometric Group Theory, Będlewo
September 2008	summer school „Physics and Tatry" in mathematical physics, Małe Ciche k. Zakopanego
September 2007	10th International Workshops for Young Mathematicians – Combinatorics, Kraków

Awards and scholarships

2013-2015	Connaught International Scholarships for Doctoral Students, University of Toronto
2011	2nd prize in the Polish Mathematical Society contest for best student paper
2009	Scholarship of the Minister of Science and Higher Education for exceptional achievements in science
2007–2011	Scholarship for academic achievements (University of Warsaw)

Other Skills

- languages: Polish (native), English (fluent, IELTS 8.5)
- scientific computing software (Mathematica, Matlab/Octave)
- programming (C/C++, Java, Python etc.)