

Curriculum Vitae

DMYTRO SAVCHUK

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RESEARCH INTERESTS

Combinatorial and geometric group theory. Groups acting on trees: self-similar, generated by automata, iterated monodromy groups, contracting and branch groups. Algorithmic aspects of self-similar groups. Developing software for computations in group theory. Schreier graphs. Amenability of groups and graphs. Random walks.

EDUCATION

- 06/2003 – 05/2009 *Ph.D. in Mathematics (Expected)*
Texas A&M University, College Station, TX
Advisors: Dr.R. Grigorchuk and Dr.V. Nekrashevych
Title: Asymptotic, algorithmic and geometric aspects of
 groups generated by automata
- 09/2001 – 07/2002 *M.S. in Mathematics, Summa Cum Laude*
Kyiv Taras Shevchenko University, Kyiv, Ukraine
- 09/1997 – 07/2001 *B.S. in Mathematics, Summa Cum Laude*
Kyiv Taras Shevchenko University, Kyiv, Ukraine

PUBLICATIONS

Research

1. *Automata generating free products of groups of order 2*, (with Y. Vorobets), preprint, 19pp., 2008, available at <http://arxiv.org/abs/0806.4801>
2. *Some graphs related to the Thompson's group F* , 20pp., 2008, to appear in Trends in Mathematics (Birkhäuser), edited by O.Bogopolski, I.Bumagin, O.Kharlampovich and E.Ventura, available at <http://arxiv.org/abs/0803.0043>
3. *Groups generated by 3-state automata over a 2-letter alphabet, II* (with I. Bondarenko, R. Grigorchuk, R. Kravchenko, Y. Muntyan, V. Nekrashevych and Z. Sunic), 26pp., 2007, to appear in J. Math. Sci. (New York), available at <http://www.arxiv.org/abs/0704.3876>
4. *Classification of groups generated by 3-state automata over a 2-letter alphabet* (with I. Bondarenko, R. Grigorchuk, R. Kravchenko, Y. Muntyan, V. Nekrashevych and Z. Sunic), Algebra and Discrete Mathematics (2008) 1, 1–163, available at <http://arxiv.org/abs/0803.3555>

5. *The spectral problem, substitutions and iterated monodromy* (with R. Grigorchuk and Z. Sunik), CRM Proceedings and Lecture Notes 42 (2007), 225–248, available at <http://arxiv.org/abs/math.GR/0703443>
6. *Groups generated by 3-state automata over a 2-letter alphabet, I*, (with I. Bondarenko, R. Grigorchuk, R. Kravchenko, Y. Muntyan, V. Nekrashevych and Z. Sunic), São Paulo Journal of Math. Sciences, 1 (2007), no.1, 1–40, available at <http://arxiv.org/abs/math.GR/0612178>
7. *On Sushchansky p -groups* (with I. Bondarenko), Algebra Discrete Math., 2007, no. 2, 22–42, available at <http://arxiv.org/abs/math.GR/0612200>
8. *On word problem in contracting automorphism groups of rooted trees*, Visnyk Kyivskogo Univ., Ser. Fiz.-Mat. Nauki, 2003, #1, 51–56

Reports

9. *About classification of groups generated by automata with three states over an alphabet with two letters, and about some questions concerning these groups* (with I. Bondarenko, R. Grigorchuk, R. Kravchenko, Y. Muntyan, V. Nekrashevych and Z. Sunic), Bulletin of Chernivtsi National University, Mathematics V.336–337 (2007), 29–39

Undergraduate Exposition

10. (with N. Rudomino-Dusyatska) *Does it worth to gamble?* (Ukrainian), In the world of Mathematics, V.5 (1999), #3, 77–82
11. (with N. Rudomino-Dusyatska) *About D. Grave and some of his works on probability theory*, Abstracts of the Third Ukrainian-Scandinavian Conference in Probability Theory and mathematical Statistics. June 8-12, 1999, Kyiv, Ukraine
12. *Projecting points on the exponent* (Ukrainian), In the world of Mathematics, V.4 (1998), #4, 26–32
13. *Nobel Prize and Mathematicians* (Ukrainian), In the world of Mathematics, V.3 (1997), #4, 62–64

SOFTWARE

- Package AutomGrp V.1.1.4 for GAP system for computations in groups and semigroups generated by automata (joint with Y. Muntyan), available at <http://www.gap-system.org/Packages/automgrp.html>

SELECTED TALKS

- GAP package AutomGrp for computations in groups and semigroups generated by automata and its applications
at 2008 AMS Fall Central Section Meeting, Kalamazoo, MI October 2008
- GAP package AutomGrp for computations in self-similar groups and semigroups: functionality, examples and applications
at Self-similarity and Branching in Group Theory Workshop,
Banff International Research Station, Banff, Alberta, Canada October 2008

- *GAP package AutomGrp for computations in groups and semigroups generated by automata*
at Computational Group Theory and Cohomology,
Grantham, United Kingdom August 2008
- *Automata generating free products of groups of order 2*
at Group theory and complexity, Steklov Mathematical Institute, Moscow July 2008
- *Self-similar groups isomorphic to free products of groups of order 2*
at Groups generated by automata and related questions, National Taras
Shevchenko University of Kyiv, Ukraine July 2008
- *Some graphs related to Thompson's group F*
at Fields Workshop in Asymptotic Group Theory and Cryptography at
Carleton University December 2007
- *On classification of groups generated by 3-state automata over 2-letter alphabet*
at Groups and their actions, Bedlewo, Poland July 2007
- *Groups generated by 3-state automata over 2-letter alphabet*
at Geometric Groups on the Gulf Coast, New Orleans January 2007
- *On presentation of iterated monodromy group $IMG(z^2 + i)$*
at Algebra, Topology, Functional and Stochastic Analysis, Koziowa, Ukraine July 2006
- *Automata groups from different points of view*
at Graduate Student Seminar, Texas A&M University October 2006
- *On Sushchansky p -groups*
at The Victor Rothschild Memorial Symposium. The 10-th Midrasha
Mathematicae in: "Asymptotic Group Theory". The Hebrew University of
Jerusalem, The Institute for Advanced Studies May 2006
- *The Schreier graph of the Thompson's group and its relation to the unitary representation
of F in $\mathcal{U}(L_2[0, 1])$*
at 5th International Algebraic Conference in Ukraine, Odessa I.I. Mechnikov
National University, Odessa, Ukraine July 2005
- *On some graphs of Schreier type related to the Thompson's group*
at Geometric and Asymptotic Methods in Group Theory Workshop,
Banff International Research Station, Banff, Alberta, Canada June 2005
- *On Schreier graphs of the Thompson's group*
at Asymptotic Group Invariants and their Applications Workshop,
Texas A&M University, College Station, TX November 2004
- *Embedding of $\mathbb{Z}[p]$ into group of finite automata transformations over 2-letter alphabet*
at Advanced Course on Automata Groups, Centre de Recerca Matemàtica,
Barcelona, Spain July 2004

TEACHING

Texas A&M University

Math 142	<i>Business Mathematics II</i> Instructor (Summer 2006)
Math 152	<i>Calculus II (with Maple[®])</i> Teacher Assistant (Fall 2007 (honors), Spring 2007, Fall 2005)
Math 166	<i>Topics in Contemporary Mathematics II</i> Grader (Summer 2005)
Math 253	<i>Calculus III (with Maple[®])</i> Teacher Assistant (Fall 2006 (honors), Spring 2005)
Math 367	<i>Basic Concepts of Geometry</i> Grader (Summer 2007)
Math 416	<i>Modern Algebra II</i> Grader (Spring 2008)
Math 433	<i>Applied Algebra</i> Grader (Summer 2008)
Math 645	<i>A Survey of Mathematical Problems I</i> Grader (Fall 2004)
Math 662	<i>Applied Algebra</i> Grader (Fall 2008)

Kyiv Taras Shevchenko University, Ukraine

Abstract Algebra
Teacher Assistant (Spring 2002)

AWARDS

- Soros Fellowship for Undergraduate Students, Kyiv, Ukraine 1998
- Ostrogradsky Prize for Researches of Ukrainian University Students at the Institute of Mathematics of the NASU, Kyiv, Ukraine 2001

PROFESSIONAL MEMBERSHIPS

- American Mathematical Society (reviewer for MathSciNet) since 06/2003

SKILLS

Languages	Ukrainian and Russian (native), English (fluent)
Computer	I have experience working and programming in different Computer Algebra Systems, including GAP, Maple [®] , R Proficient in publishing scientific documents with L ^A T _E X

REFERENCES

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|-------------------------------|---|
| Rostislav Grigorchuk | Texas A&M University, grigorch@math.tamu.edu |
| Volodymyr Nekrashevych | Texas A&M University, nekrash@math.tamu.edu |
| Zoran Šunić | Texas A&M University, sunic@math.tamu.edu |
| Yaroslav Vorobets | Texas A&M University, yvorobet@math.tamu.edu |
| Benjamin Steinberg | Carleton University, Canada, bsteinbg@math.carleton.ca |
| Tullio Ceccherini-Silberstein | University of Sannio, Italy, tulliocs@gmail.com |
| Philip Yasskin | Texas A&M University, yasskin@math.tamu.edu (teaching) |