

# Curriculum Vitae

August 7, 2024

## DMYTRO SAVCHUK

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## RESEARCH INTERESTS

Geometric and combinatorial group theory. Groups acting on rooted trees: self-similar, generated by automata, iterated monodromy groups, contracting and branch groups. Algorithmic aspects of self-similar groups. Group-based cryptography. Formal languages.  $p$ -adic dynamics. Thompson's groups. Developing software for computations in group theory. Dynamics of group actions. Free and relatively free groups.

## EDUCATION

- 06/2003 – 08/2009     *Ph.D. in Mathematics*  
Texas A&M University, College Station, TX
- 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

## WORK EXPERIENCE

- 08/2022 – present     *Chair*, Department of Mathematics and Statistics  
University of South Florida, Tampa, FL
- 01/2020 – 08/2022     *Associate Chair*, Department of Mathematics and Statistics  
University of South Florida, Tampa, FL
- 08/2016 – present     *Associate Professor*  
University of South Florida, Tampa, FL
- 09/2012 – 08/2016     *Assistant Professor*  
University of South Florida, Tampa, FL
- 09/2009 – 09/2012     *Riley Assistant Professor*  
Binghamton University, Binghamton, NY
- 09/2003 – 08/2009     *Teaching Assistant and Instructor of Record*  
Texas A&M University, College Station, TX
- 01/2002 – 05/2002     *Teaching Assistant*  
Taras Shevchenko National University of Kyiv, Ukraine

# PUBLICATIONS

\* – student coauthor

## Preprints and in Preparation

1. *Contracting self-similar groups in group-based cryptography* (with D. Kahrobaei and A. Malik\*), submitted, 2024, 37 pages
2. *Liftable self-similar groups and scale groups* (with R. Grigorchuk), submitted, 2023, 50 pages, <https://arxiv.org/abs/2312.05427>
3. *Cryptanalysis of Xifrat1-Sign.I digital signature scheme* (with K. Cabral\*), in preparation
4. *Heuristic attack on the simultaneous conjugacy problem in contracting groups acting on a binary tree* (with L. Scuderi\* and K. Seekamp\*), in preparation
5. *On diagonal actions of groups acting on rooted trees* (with R. Grigorchuk and Z. Šunić), in preparation
6. *On duality of the affine actions on trees* (with I. Bondarenko), in preparation
7. *Submanifold Projection* (with L. Sabalka), preprint, 2012, 30 pages, <http://arxiv.org/abs/1211.3111>

## Edited Volumes

8. *Special issue: Developments in language theory 2020* (with N. Jonoska, editors), International Journal of Foundations of Computer Science, V. 32 (2021), no. 6 <https://www.worldscientific.com/toc/ijfcs/32/06>
9. *Developments in language theory. 24th International Conference, DLT 2020, Tampa, FL, USA, May 11–15, 2020, Proceedings* (with N. Jonoska, editors), Lecture Notes in Computer Science book series (LNCS), volume 12086, 2020 <https://link.springer.com/book/10.1007/978-3-030-48516-0>

## Published or Accepted

10. *Explicit generators for the stabilizers of rational points in thompson's group  $F$*  (with K. Baker\*), accepted to Groups, Geometry, and Dynamics, 2024, 19 pages <https://arxiv.org/abs/2401.00404>
11. *New mathematical center in Ukraine* (with A. Gogolev, V. Nekrashevych, P. Pylyavskyy, and M. Vlasenko), Notices of the AMS, V. 71 (2024), Issue 1, p.4 <https://www.ams.org/journals/notices/202401/rnoti-p4.pdf>
12. *Solenoidal maps, automatic sequences, van der Put series, and Mealy automata* (with R. Grigorchuk), Journal of Australian Mathematical Society, 114 (2023), Issue 1, 78–109 <https://arxiv.org/abs/2006.02316>
13. *On groups of isometries and dilations of local fields and their actions on regular trees* (with R. Grigorchuk), [Proceedings](#) of the “Mathematics and Information Technologies” conference, Chernivtsi, Ukraine, September 28–30, 2023, 58–60

14. *Endomorphisms of regular rooted trees induced by the action of polynomials on the ring  $\mathbb{Z}_d$  of  $d$ -adic integers* (with E. Ahmed\*), Journal of Algebra and its Applications, Vol. 19, No. 08, 2050154 (2020), <http://arxiv.org/abs/1711.06735>
15. *The lamplighter group of rank two generated by a bireversible automaton* (with E. Ahmed\*), Communications in Algebra, 2019, 3340–3354  
<https://arxiv.org/abs/1802.03695>
16. *A connected 3-state reversible Mealy automaton cannot generate an infinite Burnside group (extended version)* (with I. Klimann and M. Picantin), International Journal of Foundations of Computer Science, 29 (2018), no. 2, 297–314
17. *Affine automorphisms of rooted trees* (with S. Sidki), Geom. Dedicata, 183 (2016), 195–213  
<http://arxiv.org/abs/1510.08434>
18. *Orbit automata as a new tool to attack the order problem in automaton groups* (with I. Klimann and M. Picantin), Journal of Algebra, 445 (2016), 433–457,  
<http://arxiv.org/abs/1411.0158>
19. *Ergodic decomposition of group actions on rooted trees* (with R. Grigorchuk), Proceedings of the Steklov Institute of Mathematics, V.292 (2016), Issue 1, 94–111  
<http://arxiv.org/abs/1412.8020>
20. *A connected 3-state reversible Mealy automaton cannot generate an infinite Burnside group* (with Ines Klimann and Matthieu Picantin), Lecture Notes in Computer Science, V. 9168, 313–325, The 19th International Conference on Developments in Language Theory (DLT 2015), 2015, 12 pp., <http://arxiv.org/abs/1409.6142>
21. *An example of an automatic graph of intermediate growth* (with A. Miasnikov), Annals of Pure and Applied Logic, 166 (2015), no. 10, 1037–1048, <http://arxiv.org/abs/1312.3710>
22. *Schreier graphs of actions of Thompson’s group  $F$  on the unit interval and on the Cantor set*, Geometriae Dedicata, V.175 (2015), 355–372, <http://arxiv.org/abs/1105.4017>
23. *On the geometry of the edge splitting complex* (with L. Sabalka), Groups, Geometry and Dynamics, 8 (2014), no. 2, 565–598, <http://arxiv.org/abs/1007.1998>
24. *Self-similar groups acting essentially freely on the boundary of the binary rooted tree* (with R. Grigorchuk), Contemporary Mathematics, V.611, 9–48, 2014  
<http://arxiv.org/abs/1212.0605>
25. *Essentially Free Actions of Self-similar Groups* (with R. Grigorchuk), Bulletin of Chernivtsi National University, Mathematics, V.2 (2012), no.2-3, 53–58.
26. *On restricting subsets of bases in relatively free groups* (with L. Sabalka), IJAC, V.22 (2012), no.4, <http://arxiv.org/abs/1103.2992>
27. *Automata generating free products of groups of order 2*, (with Y. Vorobets), Journal of Algebra, V.336 (2011), Issue 1, 53–66, 2011, available at <http://arxiv.org/abs/0806.4801>

28. *Some graphs related to the Thompson's group  $F$* , in *Combinatorial and geometric group theory*, Trends in Mathematics (Birkhäuser), edited by O.Bogopolski, I.Bumagin, O.Kharlampovich and E.Ventura, 2010, 279–296, <http://arxiv.org/abs/0803.0043>
29. *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), *Journal of Math. Science (New York)*, V. 156 (2009), no.1, 187–208, <http://www.arxiv.org/abs/0704.3876>
30. *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), no.1, 1–163, <http://arxiv.org/abs/0803.3555>
31. *The spectral problem, substitutions and iterated monodromy* (with R. Grigorchuk and Z. Sunic), *CRM Proceedings and Lecture Notes* 42 (2007), 225–248, <http://arxiv.org/abs/math.GR/0703443>
32. *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, <http://arxiv.org/abs/math.GR/0612178>
33. *On Sushchansky  $p$ -groups* (with I. Bondarenko), *Algebra Discrete Math.*, 2007, no.2, 22–42, <http://arxiv.org/abs/math.GR/0612200>
34. *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*, Issue 336–337 (2007), 29–39.
35. *On word problem in contracting automorphism groups of rooted trees*, *Bulletin of Taras Shevchenko National University of Kyiv, Series: Physics & Mathematics*, 2003, no.1, 51–56

## Undergraduate Exposition

36. (with N. Rudomino-Dusyatska) *Is gambling worth it?* (Ukrainian), *In the world of Mathematics*, V.5 (1999), no.3, 77–82
37. (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
38. *Projecting points on the exponent* (Ukrainian), *In the world of Mathematics*, V.4 (1998), no.4, 26–32
39. *Nobel Prize and Mathematicians* (Ukrainian), *In the world of Mathematics*, V.3 (1997), no.4, 62–64

## SOFTWARE

40. Package AutomGrp V.1.3.2 (last release on 30/09/2019) for GAP system for computations in groups and semigroups generated by automata (joint with Y. Muntyan), accepted GAP package <http://www.gap-system.org/Packages/automgrp.html>

41. LBA: A variant of the length-based attack on the simultaneous conjugacy search problem in contracting groups, Github repository (last release 08/07/2024), written in GAP (joint with A. Malik\*)  
[https://github.com/Arsalan-A-M/LBA\\_SCSP\\_Contracting\\_Groups](https://github.com/Arsalan-A-M/LBA_SCSP_Contracting_Groups)
42. Cryptanalysis of Xifrat1-Sign.I digital signature scheme, Github repository (last release 12/28/2023), written in GAP (joint with K. Cabral\*)  
<https://github.com/kiki1123/xifrat-cryptanalysis/tree/main>
43. Heuristic attack on the simultaneous conjugacy problem in contracting groups acting on a binary tree, Github repository (last release 07/17/2024), written in GAP (joint with L. Scuderi\* and K. Seekamp\*)  
<https://github.com/llscuderi/Portrait-Based-Attack-on-SCSP-in-Contracting-Groups>
44. Frontend for the database of (3,2)-automata (developed jointly with Junyi Tu\*),  
<http://savchuk.myweb.usf.edu/autom32new.html>

## AWARDS AND GRANTS

- (Co-PI) NSF RTG: Applied Algebra at the University of South Florida, [DMS-2342254](#) (\$2,497,545) 2024–2029
- (Co-PI) NSF REU Site: Cryptography and Coding Theory at the University of South Florida, [CNS-2244488](#) (\$447,000) 2023–2025
- (Co-PI) AIM Workshop “Groups of dynamical origin” (about \$60,000), American Institute of Mathematics [AIM Workshops program](#) 2024
- (PI) Conference Support Grant “Groups of Dynamical Origins, Automata and Spectra”, SwissMAP Research Station, Les Diablerets, Switzerland, NSF, [DMS-2309562](#) (\$20,700) 2023
- (PI) Conference Support Grant “International Conference: Developments in Language Theory 2022”, NSA (\$15,400) 2021
- (PI) Conference Support Grant, ResearchOne, USF (\$1,000) 2020
- (Co-PI) Conference Support Grant “International Conference: Developments in Language Theory 2020”, NSF [CCF-1945852](#) (\$10,000) – Extended to DLT-2022 due to COVID pandemic 2019
- (Co-PI) Conference Support Grant “International Conference: Developments in Language Theory 2020”, NSA (\$15,400) – Cancelled due to COVID pandemic 2019
- (PI) Conference Support Grant, ResearchOne, USF (\$1,000) 2018
- (PI) Conference Support Grant, USF Internal Award (\$5,000) 2017
- (PI) AIM SQuaREs Program Award (<https://aimath.org/programs/squares/>) 2017-2022

- Grant from Helmsley foundation to enhance Calculus Curriculum at USF (\$2,500) 2016
- (PI) Collaboration Grant for Mathematicians, Simons Foundation, #317198 (\$35,000) 2014-2022
- (PI) Proposal Enhancement Grant, USF Internal Award (\$16,504) 2014
- (PI) New Researcher Grant, USF Internal Award (\$8,439) 2013
- Ostrogradsky Prize for Researchers among Ukrainian University Students at the Institute of Mathematics of NAS in Ukraine, Kyiv, Ukraine 2001
- Soros Foundation Fellowship for Undergraduate Students, Kyiv, Ukraine 1998

## SELECTED TALKS

### Conference Talks

- Sep 2024** (invited, scheduled) *Workshop “Computational Group Theory and Applications” Special trimester program on Post-quantum Algebraic Cryptography*  
IHP, Paris, France
- Jul 2024** (invited) *Special session “New Trends in Self-similarity of Groups, Trees and Fractals”* at the *AMS-UMI Joint Meeting*  
Palermo, Italy
- Jul 2024** (invited) *Special session “Post-quantum Group-based Cryptography”*  
at the *AMS-UMI Joint Meeting*  
Palermo, Italy
- Jun 2024** (invited) *Groups, Logic, and Computation: Interactions between Geometric Group Theory, Model Theory, And Computer Science*  
Stevens Institute of Technology, Hoboken, NJ
- Feb 2024** (invited plenary talk) *Geometric and Asymptotic Group Theory with Applications (GAGTA-2024)*  
Marseille, France
- Oct 2023** (invited) *SIAM-NNP Annual Meeting*  
NJIT, Newark, NJ
- Sep 2023** (invited) *Mathematics and Information Technology* (online)  
Chernivtsi, Ukraine
- Sep 2023** (5-minute talk) *GoTh Workshop: Groups of Thompson and their relatives*  
Magdeburg, Germany
- Jul 2023** (plenary) *12th International Algebraic Conference in Ukraine* (online),  
Ukraine
- May 2023** (invited) *Joint Spectra and related Topics in Complex Dynamics and Representation Theory*  
[Video of the talk](#)  
Banff International Research Station, Banff, Alberta, Canada
- Aug 2022** (invited) *2022 Combinatorics, Computing, Group Theory and Applications in South Florida*  
FAU, Boca Raton, Florida

- Jul 2022** (substitution as an organizer) *AMS-EMS-SMF Joint Meeting*  
Grenoble, France
- Feb 2022** (invited) *Ivan Fedorovych Grygorchuk's 95-th Anniversary* (online)
- Jul 2021** (invited) *13th International Algebraic Conference in Ukraine* (online)  
Video of the talk  
Kyiv, Ukraine
- Jul 2020** (invited) *International conference: Kyiv Algebra 2020* (online)  
Video of the talk  
Kyiv, Ukraine
- Oct 2019** (invited) *AMS Fall Eastern Sectional Meeting #1151*,  
Binghamton University, NY
- Jul 2019** (plenary) *12th International Algebraic Conference in Ukraine*,  
Vinnytsia, Ukraine
- Jun 2019** (invited) *Zassenhaus Group Theory Conference*,  
Binghamton, NY
- Jul 2018** *Geometric and Asymptotic Group Theory with Applications*,  
Korea Institute for Advanced Study, Seoul, Korea
- Apr 2018** (invited) *AMS Spring Eastern Sectional Meeting #1139*,  
Northeastern University, Boston, MA
- Jul 2017** (invited) *MealyM Final Event*, Paris, France
- Jul 2017** *11th International Algebraic Conference in Ukraine*, Kyiv, Ukraine
- May 2017** (invited, 1st talk) *AMS Sectional Meeting #1129*,  
Hunter College, CUNY, New York
- May 2017** (invited, 2nd talk) *AMS Sectional Meeting #1129*,  
Hunter College, CUNY, New York
- Dec 2016** (invited) *Groups and Actions: Geometry and Dynamics*, Kyiv, Ukraine
- Aug 2016** (invited) *Workshop: Connections Between Complex Dynamics,  
Statistical Physics, and Limiting Spectra of Self-similar Group Actions*,  
IUPUI, Indianapolis, IN
- Aug 2016** (invited) *Computational Group Theory Oberwolfach Workshop*,  
Oberwolfach, Germany
- Jun 2016** (invited) *GAGTA-10*, Stevens Institute of Technology, Hoboken, NJ
- Jan 2016** (invited) *AMS Joint Meeting*, Seattle, WA
- Jun 2015** *AMS-EMS-PMS international meeting*, Porto, Portugal
- May 2015** (invited) *Zassenhaus Group Theory Conference*,  
Binghamton, NY
- Jan 2015** (invited) *AMS Joint Meeting*, San Antonio, TX
- Jun 2014** (invited) *Topological Methods in Group Theory*,  
Ohio State University, Columbus, OH
- May 2014** (invited) *Groups and Dynamics Workshop*,  
Texas A&M University, College Station, TX
- Dec 2013** (invited) *Winter Meeting of Canadian Mathematical Society*,  
Ottawa, QC, Canada
- Aug 2013** *Groups St Andrews 2013*, St Andrews, Scotland, UK
- Jul 2013** (invited) *The 9-th International algebraic conference in Ukraine*,  
Lviv, Ukraine
- May 2013** (invited) *GAGTA-7*, CUNY, New York, NY

- Apr 2013** (invited) *AMS Sectional Meeting #1088*,  
Boston College, Chestnut Hill, MA
- Dec 2012** (invited) *Winter Meeting of Canadian Mathematical Society*,  
Montreal, QC, Canada
- Oct 2012** *Group Theory, Combinatorics, and Computing*, Boca Raton, FL
- Jan 2012** (invited, 2 talks) *AMS Joint Meeting*, Boston, MA
- Oct 2011** (invited) *AMS Sectional Meeting #1075*, Salt Lake City, UT
- Oct 2011** (invited) *AMS Sectional Meeting #1074*, Lincoln, NE
- Mar 2011** (invited) *Spring Topology and Dynamics Conference*,  
University of Texas at Tyler, Tyler, TX
- Dec 2010** (invited) *Second Manhattan Group Theory Day*,  
Graduate Center, CUNY
- May 2010** (invited) *AMS Sectional Meeting #1060*,  
Newark, NJ
- Oct 2008** (invited) *AMS Fall Central Sectional Meeting #1043*  
Kalamazoo, MI
- Oct 2008** (invited) *Self-similarity and Branching in Group Theory Workshop*,  
Banff International Research Station, Banff, Alberta, Canada
- Aug 2008** *Computational Group Theory and Cohomology*,  
Grantham, United Kingdom
- Jul 2008** (invited) *Group theory and complexity*,  
Steklov Mathematical Institute, Moscow, Russia
- Jul 2008** (invited) *Groups generated by automata and related questions*,  
Kyiv National Taras Shevchenko University, Ukraine
- Dec 2007** (invited) *Fields Workshop in Asymptotic Group Theory and Cryptography*,  
Carleton University, Canada
- Jul 2007** *Groups and their actions*,  
Bedlewo, Poland
- Jan 2007** *Geometric Groups on the Gulf Coast*,  
New Orleans, LA
- Jul 2006** (invited) *Algebra, Topology, Functional and Stochastic Analysis*,  
Koziova, Ukraine
- May 2006** *The 10-th Midrasha Mathematicae in: "Asymptotic Group Theory"*,  
The Hebrew University of Jerusalem, The Institute for Advanced Studies
- Jul 2005** (invited) *5-th International Algebraic Conference in Ukraine*,  
Odessa I.I. Mechnikov National University, Odessa, Ukraine
- Jun 2005** (invited) *Geometric and Asymptotic Methods in Group Theory Workshop*,  
Banff International Research Station, Banff, Alberta, Canada
- Nov 2004** *Asymptotic Group Invariants and their Applications Workshop*,  
Texas A&M University, College Station, TX
- Jul 2004** *Advanced Course on Automata Groups*,  
Centre de Recerca Matemàtica, Barcelona, Spain

### Seminar Talks

- Apr 2024** *Groups and Dynamics Seminar*, Texas A&M University



**Mar 2024** *Geometry and Topology Seminar*, University of South Florida  
**Nov 2023** *Geometry and Topology Seminar*, University of South Florida  
**Mar 2023** *Groups and Geometry Seminar*, Université de Genève  
**Feb 2022** *Topology and Dynamics Seminar*, University of Florida  
**Sep 2019** *Discrete Mathematics Seminar*, University of South Florida  
**Mar 2019** *Groups and Dynamics Seminar*, Texas A&M University  
**May 2018** *Groups and Dynamics Seminar*, Texas A&M University  
**Jan 2017** *Colloquium*, Indiana University Purdue University Indiana  
**Nov 2016** *Discrete Mathematics Seminar*, University of South Florida  
**Oct 2016** *New York Group Theory Seminar*, CUNY Graduate Center, NY  
**Jan 2016** *Colloquium*, Oregon State University, Corvallis, OR  
**Oct 2015** *Discrete Mathematics Seminar*, University of South Florida  
**Oct 2015** *Analysis Seminar (2 talks)*, University of South Florida  
**Mar 2015** *Discrete Mathematics Seminar*, University of South Florida  
**Oct 2014** *Discrete Mathematics Seminar*, University of South Florida  
**Aug 2014** *Groups and Dynamics Seminar*, Texas A&M University  
**May 2014** *CS Seminar of Laboratoire d'Informatique Algorithmique: Fondements et Applications*, Université Paris Diderot – Paris 7  
**Oct 2013** *Group Theory International Webinar*, hosted by Stevens Institute of Technology  
**Sep 2013** *Discrete Mathematics Seminar*, University of South Florida  
**Aug 2013** *Algebra seminar*, Universidade de Brasília, Brasília, Brazil  
**Apr 2013** *Discrete Mathematics Seminar*, University of South Florida  
**Mar 2013** *Topology seminar*, Saint Louis University, Saint Louis, MO  
**Nov 2012** *Discrete Mathematics Seminar*, University of South Florida  
**Oct 2012** *Discrete Mathematics Seminar*, University of South Florida (2 talks)  
**May 2012** *New York Group Theory Seminar*, CUNY Graduate Center, NY  
**Mar 2012** *Groups and Dynamics Seminar*, Texas A&M University  
**Feb 2012** *Colloquium*, University of South Florida, FL  
**Feb 2012** *Colloquium*, Western Carolina University, Cullowhee, NC  
**Jan 2012** *Algebra Colloquium*, Graduate Center, City University of New York  
**Jan 2012** *Colloquium*, Bowling Green State University, Ohio  
**Nov 2011** *Geometry & Topology seminar*, Graduate Center, City University of New York  
**Mar 2011** *Topology/Geometry seminar*, Yale University  
**Mar 2011** *Algebra Seminar*, Carleton University, Canada  
**Nov 2010** *Groups and Dynamics Seminar*, Texas A&M University  
**Nov 2010** *Geometry & Topology seminar*, Binghamton University  
**May 2010** *Group Theory International Webinar*, hosted by Stevens institute of technology  
**Mar 2010** *Geometry & Topology seminar*, Binghamton University  
**Mar 2010** *Algebra seminar*, Binghamton University  
**Nov 2009** *Topology & Geometric Group Theory Seminar*, Cornell University  
**Oct 2009** *New York Group Theory Seminar*, Graduate Center, City University of New York  
**Sep 2009** *Geometry & Topology seminar*, Binghamton University (2 talks)  
**Feb 2009** *Colloquium*, Binghamton University  
**Jan 2009** *Groups and Dynamics Seminar*, Texas A&M University  
**Dec 2008** *Groups and Dynamics Seminar*, Texas A&M University

## Talks for Students and K-12

- Apr 2015** “Algebra around us”,  
Pi Mu Epsilon (Florida Epsilon chapter) Induction Banquet Keynote speaker
- May 2014** “What do mathematicians do?”,  
Interactive presentation for 3-rd graders at Chiles Elementary School, Tampa, FL
- Oct 2013** “Elliptic curves and their use in cryptography”,  
Math Club, University of South Florida
- Oct 2012** “Fractals and where do we see them”, Math Club, University of South Florida
- Apr 2012** “On the notions of dimension”,  
Undergraduate Math Club, Binghamton University
- Feb 2012** “DNA computations and Graph theory”,  
Undergraduate Math Club, Binghamton University
- Oct 2011** “Open Key Cryptography and how RSA works”,  
Undergraduate Math Club, Binghamton University
- May 2011** “Lickorish-Wallace theorem on 3-manifolds”,  
Toeholds in Topology Graduate seminar, Binghamton University
- Sep 2010** “Asymptotic dimension of spaces and groups I, II”,  
Toeholds in Topology Graduate seminar, Binghamton University (2 talks)
- Feb 2010** “What are the fractals and where do we see them”,  
Undergraduate Math Club, Binghamton University
- Oct 2009** “Introduction to the world of groups”,  
Undergraduate Math Club, Binghamton University
- Sep 2009** “Introduction to groups generated by automata I, II”,  
Toeholds in Topology Graduate seminar, Binghamton University (2 talks)
- Oct 2006** “Automata groups from different points of view”,  
Graduate Student Seminar, Texas A&M University

## TEACHING

### University of South Florida

- |          |  |
|----------|--|
| MAD 6616 | <i>Algebraic Automata Theory (graduate level)</i><br>Spring 2021, Spring 2023  |
| MAT 5710 | <i>Scientific Computation and Writing (graduate level)</i><br>Fall 2022 (new course development), Fall 2023, Fall 2024 |
| MAT 6932 | <i>Groups Generated by Automata (graduate level)</i><br>Fall 2016 (new course development)                             |
| MAT 5932 | <i>Combinatorial and Geometric Group Theory (graduate level)</i><br>Spring 2014, Spring 2018 (new course development)  |
| MTG 5317 | <i>Topology II (graduate level)</i><br>Spring 2013   |

MAS 5311	<i>Algebra I (graduate level)</i> Fall 2015
MAS 5312	<i>Algebra II (graduate level)</i> Spring 2016
MAT 4471	<i>Cryptography and Coding Theory</i> Fall 2013, Fall 2014 (new course development)
MAS 4302	<i>Elementary Abstract Algebra II</i> Spring 2017
MTG 4302	<i>Introduction to Topology</i> Spring 2019, Spring 2022
MAS 3105	<i>Linear Algebra</i> Fall 2012, Fall 2013, Spring 2014, Spring 2018, Fall 2018 Fall 2019
MAC 2312	<i>Calculus II</i> Spring 2013, Fall 2018, Fall 2019
MAC 2282	<i>Engineering Calculus II</i> Spring 2015
MAC 2311	<i>Calculus I (including course coordination)</i> Spring 2015, Fall 2016, Spring 2017, Summer 2018, Summer 2019 Summer 2021
MAC 2281	<i>Engineering Calculus I</i> Fall 2014, Fall 2015, Spring 2015, Spring 2016

### **Binghamton University**

Math 130	<i>Mathematics in Action</i> Spring 2011 (250 students), Fall 2011 (280 students)
Math 304	<i>Linear Algebra</i> Fall 2009 (44 students), Fall 2010 (50 students)
Math 330	<i>Number Systems</i> Spring 2010 (25 students)
Math 371	<i>Ordinary Differential Equations</i> Fall 2009 (40 students)
Math 372	<i>Dynamical Systems</i> Fall 2010 (36 students)
Math 375	<i>Complex Variables</i>

Spring 2012

Math 461      *Topology I (undergraduate level)*  
Fall 2011 (21 students)

## Texas A&M University

Math 142      *Business Mathematics II*  
Instructor (Summer 2006)

Math 152      *Calculus II (with Maple)*  
Teacher Assistant (Fall 2007 (honors), Spring 2007, Fall 2005)

Math 253      *Calculus III (with Maple)*  
Teacher Assistant (Fall 2006 (honors), Spring 2005)

Grader for the following courses:

Math 166      *Topics in Contemporary Mathematics II*

Math 308      *Differential Equations*

Math 367      *Basic Concepts of Geometry*

Math 414      *Fourier Series and Wavelets*

Math 416      *Modern Algebra II*

Math 433      *Applied Algebra*

Math 645      *A Survey of Mathematical Problems I*

Math 662      *Applied Algebra (Graduate Course)*

## Kyiv Taras Shevchenko University, Ukraine

*Abstract Algebra*

Teacher Assistant (Spring 2002)

## PROFESSIONAL SERVICE

- Associate Editor or Member of Editorial Board of the following journals:
  - [Journal of Mathematical Cryptology](#), De Gruyter
  - [International Journal of Computer Mathematics: Computer Systems Theory](#), Taylor&Francis
  - [Carpathian Mathematical Publications](#), Precarpathian National University
- Founding member of the coordination committee at the [International Center for Mathematics in Ukraine](#)
- Referee for the following journals and conference proceedings:
  - Advances in Mathematics
  - Groups, Geometry, and Dynamics

- Geometriae Dedicata
  - Journal of Modern Dynamics
  - London Mathematical Society Lecture Note Series
  - Experimental Mathematics
  - Journal of Symbolic Computation
  - Pacific Journal of Mathematics
  - STACS 2013 (Symposium on Theoretical Aspects of Computer Science)
  - CiE2014 (Computability in Europe)
  - CiE2015 (Computability in Europe)
  - CiE2016 (Computability in Europe)
  - ISSAC 2016 (The 41-st International Symposium on Symbolic and Algebraic Computation)
  - DLT 2020 (Developments in Language Theory)
  - International Journal of Foundations of Computer Science
  - Theoretical Computer Science
  - Journal of Mathematical Cryptology
  - International Journal of Computer Mathematics: Computer Systems Theory
  - St. Petersburg Math Journal
  - International Journal of Algebra and Computation
  - International Journal of Group Theory
  - Semigroup Forum
  - European Journal of Combinatorics
  - Expositiones Matheamticae
  - Topology Proceedings
  - Contemporary Mathematics
  - Buletinul Academiei de Științe a Republicii Moldova. Matematica
- Reviewer for the National Science Centre (Narodowe Centrum Nauki - NCN), Poland
  - Reviewer for the USF Internal Awards Program
  - Reviewer for Mathscinet (since 06/2006, 33 papers reviewed)
  - Organizer of a Special Session “[Infinite groups and related topics](#)” at the Mathematical Congress of the Americas 2025, Miami, July 2025
  - Organizer of “[Groups of dynamical origin and their applications](#)” AIM Workshop, June 2024
  - Organizer of “[Groups of dynamical origins, automata and spectra](#)” conference, Les Diableretes, Switzerland, March 2023

- Organizer of a Special Session “[Groups and topological dynamics](#)” at the AMS-SMF-EMS Joint International Meeting, Grenoble, France, July 2022
- Organizer of [DLT-2022](#) (Developments in Language Theory) conference, University of South Florida, Tampa, FL, May 2022
- Organizer of [2022 DTMB Workshop on Discrete and Topological Models in Molecular Biology](#), University of South Florida, Tampa, FL, May 2022
- Organizer of [Ivan Fedorovich Grygorchuk’s 95-th Anniversary Online Scientific International Seminar](#), February 2022
- Organizer and PC-chair of [DLT-2020](#) (Developments in Language Theory) conference, University of South Florida, Tampa, FL, May 2020 (cancelled due to COVID pandemic)
- Organizer of a Special Session “[Groups and topological dynamics](#)” at the Joint Meeting of AMS-MAA, Denver, January 2020
- Organizer of “[Zassenhaus groups and friends](#)” international conference, University of South Florida, Tampa, FL, April 6-8, 2018
- Organizer of a Special Session “[Combinatorial/Geometric/Probabilistic Methods in Group Theory](#)” at the AMS Fall Central Sectional Meeting (#1131), Denton, TX, September 2017
- Organizer of a conference “[Geometric and Probabilistic Methods in Group Theory and Dynamical Systems](#)”, Texas A&M University, College Station, TX, November 9-12, 2015
- Organizer of a Special Session “[New trends in automata groups and semigroups](#)” at the Joint International Meeting of AMS-EMS-PMS (#1111), Porto, June 2015
- Organizer of “[Groups and Dynamics Workshop](#)”, Texas A&M University, May 6, 2014
- Organizer of “[Groups Acting on Rooted Trees and Around](#)” workshop, Institut Henri Poincaré, Paris, France, February 24-28, 2014
- Organizer of Geometry and Topology seminar at Binghamton University (2011-2012)
- Organizer of Toeholds in Topology seminar for graduate students at Binghamton University (2010-2012)

## UNIVERSITY SERVICE

- Chair of the Department of Mathematics and Statistics (August 2022 – present)
- Associate Chair (January 2020 – August 2022)
  - Overseeing the graduate programs
  - Updating the graduate catalog (submitted 15 course proposals)
  - Supervising teaching assistants
  - Overseeing the registration issues for both undergraduate and graduate students

- Scheduling the classes for the Tampa campus at the Math and Stats Department
- Faculty advisor for the [ENGIN Service Club at USF](#) (10/1/2023 – present)
- Chair of the graduate committee (January 2020 – August 2022)
- Member of the School and College Graduate Curriculum Committees (September 2020 – May 2022)
- Graduate Admissions Director at the Mathematics and Statistics Department at USF (September 2018 – January 2020)
- Advisor of Undergraduate Math Club at Binghamton University (2009-2012)
- Chapter Advisor for Pi Mu Epsilon Honor Society (2010-2012)

## STUDENTS

- Arsalan Malik (Ph.D., Current), USF
- Luciana Scuderi (Undergraduate from Truman State University), REU at USF 2024
- Kerry Seekamp (Undergraduate from Smith College), REU at USF 2024
- Kainna Cabral (Undergraduate from Northeastern University), REU at USF 2023
- Elsayed Ahmed (Ph.D., December 2018), USF
- Krystofer Baker (B.A. Honors Thesis, May 2017), USF
- Allen Pennington (M.A., May 2017), USF
- Suzana Milea (M.A., May 2014), USF
- Louis Caponi (M.A., May 2014), USF
- Tracy Stefanovic (B.A. Honors Thesis, 2014), USF

## SKILLS

Languages	Ukrainian and Russian (native), English (fluent)
Computer	I have experience working and programming in different Computer Algebra Systems, including <b>GAP</b> , Maple, R Proficient in publishing scientific documents with $\text{\LaTeX}$ , creating computer graphics using CorelDRAW and Inkscape