Azza Gaysin

📍 Universität Passau, Lehrstuhl Mathematische Logik, Dr.-Hans-Kapfinger Straße 30, 94032 Passau

📞 +420 735 077 419

✉ azza.gaysin@gmail.com

EDUCATION

2018 – 2023 **Ph.D., Mathematics**
Faculty of Mathematics and Physics, Department of Algebra, Charles University
- Study Programme: Algebra, Theory of Numbers and Mathematical Logic
- Dissertation: Proof Complexity of CSP
- Supervisor: Jan krajíček (email: krajicek@karlin.mff.cuni.cz)

2014 – 2018 **Master's degree, Mathematics**
Faculty of Mathematics and Physics, Department of Algebra, Charles University
- Study programme: Mathematical Structures
- Master's thesis: Lattices of Weighted Clones
- Supervisor: Libor Barto (email: libor.barto@mff.cuni.cz)
- Average score: 1.3-1.4

2009 – 2011 **Master's degree, Mathematics**
Faculty of Mathematics and Mechanics, Department of Algebra, Ural State University
- Study programme: Discrete Mathematics and Mathematical Logic (confirmed by Ostrava University, Applied Mathematics Study Program, Applied Mathematics)
- Master's theses: Semigroups of Hall relation and block-groups
- Supervisor: Mikhail Volkov (email: mishavolkov@gmail.com)
- Average score: 1.4

2005 – 2009 **Bachelor's degree, Mathematics**
Faculty of Mathematics and Mechanics, Department of Algebra, Ural State University
- Study programme: Mathematics (confirmed by Ostrava University, Applied Mathematics Study Program, Applied Mathematics)
- Bachelor's theses: 'Finite semigroups of languages and class of finite positively ordered semigroups'
- Supervisor: Mikhail Volkov (email: mishavolkov@gmail.com)
- Average score: 1.3

RESEARCH PAPERS

11/2022 *Proof complexity of CSP, submitted*, available at arxiv.org

09/2020 *Block-groups and Hall relations*, Semigroups, Categories, and Partial Algebras, 25–32. Springer Singapore, (2021).

04/2020 *H-Coloring Dichotomy in Proof Complexity*, Journal of Logic and Computation, 31(5):1206–1225, (2021).

RESEARCH INTERESTS

Proof complexity, bounded arithmetic, logic, model theory

Semigroups, finite automata, formal language theory

Constraint satisfaction problems, universal algebra, complexity theory

INTERNSHIPS

01/2022-04/2022	Polytechnic University of Catalonia. Supervisor: Albert Atserias (email: atserias@cs.upc.edu)

TEACHING

2023   Model theory, Department of Mathematics, Logic and Geometry, University of Passau (assistant lecturer)

2023   Complexity theory, Department of Mathematics, Logic and Geometry, University of Passau (assistant lecturer)

2023   Introduction to constraint satisfaction problems, Department of Mathematics, Logic and Geometry, University of Passau (lecturer)

2023   Introduction to logic, Department of Mathematics, Logic and Geometry, University of Passau (assistant lecturer)

2012   Course of Discrete Algebra, Faculty of Mathematics and Mechanics, Department of Algebra, Ural State University, Russia (assistant lecturer)

2012   Course of Higher and Further Mathematics, Faculty of Chemistry, Ural State University, Russia (assistant lecturer)

GRANTS

04/2021–03/2023   START grant, Charles University. One of the investigators of the student grant *Classification of Automated Formal Systems*
Other members of the team: Barbora Hudcová (principal investigator), Jakub Krásenský

TALKS and CONFERENCES

09/2023   42nd Weak Arithmetics Days, Greece

03/2023   Workshop 'Mathematics of Cellular automata', Czech republic (help in the organization)

11/2022   Student Workshop on Applied Mathematics (SWAM), Czech Republic (presentation: 'Proof complexity of CSP')

08/2022   FLoC Proof Complexity Workshop, Haifa, Israel (presentation: 'Proof Complexity of CSP')

07/2022   Mathematical approaches to lower bounds: the complexity of proofs and computation" at ICMS, online (presentation: 'Proof Complexity of CSP')

06/2022   Complexity Theory with a Human Face, 3rd Edition, Špindlerův Mlýn, Czech Republic

07/2022   Logic Colloquium, online (presentation: '$\mathcal{H}$-Coloring Dichotomy in Proof Complexity')

06/2021   Kurt Gödel Day 2021, Brno, Czech Republic (presentation: '$\mathcal{H}$-Coloring Dichotomy in Proof Complexity')

06/2020   WiL 2020, online (poster: '$\mathcal{H}$-Coloring Dichotomy in Proof Complexity')

02/2020   Dagstuhl Seminar 20061: SAT and Interactions, Dagstuhl, Germany

08/2019   Logic Colloquium 2019, Prague, Czech Republic

08/2019	16th INTERNATIONAL CONGRESS OF LOGIC, METHODOLOGY AND PHILOSOPHY OF SCIENCE AND TECHNOLOGY, Prague, Czech Republic
11/2018	FEALORA Workshop 2018, Czech Republic (presentation: 'Weighted clones over the clones of the Post lattice')
09/2017	55th Summer School on Algebra and Ordered Sets, High Tatras, Slovakia (presentation: 'Weighted clones over the clones of the Post lattice')
07/2017	Arbeitstagung Allgemeine Algebra + 5th Novi Sad Algebraic Conference, Novi Sad, Serbia
06/2016	The 92th Arbeitstagung Allgemeine Algebra, Czech Republic (help in the organization)
09/2015	53rd Summer School on General Algebra and Ordered sets, Srni, Czech Republic
06/2015	Workshop on Groups and Semigroups and Special Session on 'Algebraic Theory of Semigroups', Porto, Portugal
09/2011	International conference Algebra and mathematical logic, Kazan, Russian (presentation: 'Semigroups of Hall relation and block-groups')

WORK EXPERIENCE

04/2023 – present

Research assistant
Department of Mathematics, Logic and Geometry, University of Passau

11/2017 – 04/2022

Process Manager / Data Analyst
Státní pokladna Centrum sdílených služeb, s. p. (https://www.spcss.cz), Prague
- External project (customer - Ministry of Finance of the Czech Republic): development of a gambling control and data analysis system. Tasks: analysis of the customer's requirements for the volume and content of the data provided, development and normalization of the database structure, writing queries, generating reports, analysis of the data, writing methodical instructions, creating a document template for data collection with macros, filing tasks for developers.
- Internal project (customer - SPCSS): creating of process map. Tasks: optimization and description of the company's internal processes in accordance with ISO 20000 standards, creation of a graphic process map according BPMN, creating methodological guidelines (limiting notification to improve model readability).

10/2011 – 2/2014

System Analyst
SKB Kontur (https://kontur.ru/eng/about), Yekaterinburg
- Kontur.EDI (electronic workflow for retail): participation in the development of the service from scratch by European standards and analogues, description and optimization of business processes of existing and potential customers, analysis of the use of the service and working with scenarios, communication with specialists in technical support, sales and implementation, participation in usability testing, filing tasks for developers.
- Kontur.Diadoc (electronic legally-significant documents interchange between companies): maintenance of a product website (writing content, attracting of visitors and analysis of their behavior), filing tasks for designers and ui designers, participation in the organization of events, preparation of promotional materials (leaflets, letters, webmails, commercials), writing articles in the financial, accounting and business magazines (description of customer experience, changes in legislation, etc.), conducting online consultations on behalf of the experts, communicating with customers, adjustment of product offerings.

3/2010 – 8/2011

Engineer-analyst
SPETSNEFTEGAZ, UAB, Yekaterinburg
- Data analysis of magnetic in-pipe diagnostics of main gas pipelines and oil pipelines in in-house developed software, classification of defects and making recommendations for their correction, development of methodological materials.

SKILLS

Languages
- Russian – mother tongue
- Czech – C1 (Preparatory Program for Higher Education in the Czech Republic, Joint Program of Charles University in Prague FHS and Azzi, s.r.o.)
- English – C1 (Language course: Translation from English to Russian in the field of professional communications at Ural State University)

Knowledge and skills
- MS Office, Microsoft SQL Server, Oracle SQL Developer, PL/SQL, Oracle Data Modeler, Aqua Data Studio, Bizagi Modeler, Service Desk (Change Manager, L2), SVN, VBA, LaTeX, Google Analytics, CMS, IDEF0, BPMN, ISO 20000, ITIL, The Basics of Cryptography, MatLab, SageMath, Python.