Curriculum Vitae

Herman Goulet-Ouellet

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Employment

Postdoctoral researcher. 2024–2025 (ongoing)

CTU, Czech Republic. Funded by the CTU Global Postdoc Fellowship program. Collaboration with Štěpán Starosta.

Postdoctoral researcher. 2023

IRIF, France. Funded by the ANR CODYS project (ANR-18-CE40-0007). Collaboration with Valérie Berthé.

Education

PhD in Mathematics. With highest praise (*com Distinção e Louvor*). 2022

University of Coimbra, Portugal.

Advisors: Jorge Almeida and Alfredo Costa.
Thesis: Schützenberger groups of minimal shift spaces.

Master in Mathematics. With highest praise (*Excellent*). 2018

Université du Québec à Montréal, Canada.

Advisor: Franco Saliola.

Bachelor in Mathematics. 2016

Université du Québec à Montréal, Canada.

Diploma of College Studies in Computer science and mathematics. 2013

Collège de Maisonneuve, Montreal, Canada.

Publications

Papers

V. Berthé and H. Goulet-Ouellet. **Obstructions to return preservation for episturmian morphisms**. *Theory of Computing Systems* (2024). doi: 10.1007/s00224-024-10190-y. arXiv: 2404.08072.

J. Almeida, H. Goulet-Ouellet, and O. Klíma. **What makes a Stone topological algebra profinite**. *Algebra Universalis*, vol. 84, no. 1 (2023). doi: 10.1007/s00012-023-00804-w. arXiv: 2109.07286v1.

Last update: October 21, 2024

V. Berthé and H. Goulet-Ouellet. **On substitutions preserving their return sets**. In: *Combinatorics on Words*. Ed. by A. Frid and R. Mercas. vol. 13899. Lecture Notes in Computer Science. 2023. doi: 10.1007/978-3-031-33180-0_6. hal: hal-04311379.

H. Goulet-Ouellet. **Freeness of Schützenberger groups of primitive substitutions**. *International Journal of Algebra and Computations*, vol. 32, no. 06 (2022), pp. 1101–1123. doi: 10.1142/S0218196722500473. arXiv: 2109.11957v1.

H. Goulet-Ouellet. **Pronilpotent quotients associated with primitive substitutions**. *Journal of Algebra*, vol. 606 (2022), pp. 341–370. doi: 10.1016/j.jalgebra.2022.05.021. arXiv: 2204.05706v1.

H. Goulet-Ouellet. **Suffix-connected languages**. *Theoretical Computer Science*, vol. 923 (2022), pp. 126–143. doi: 10.1016/j.tcs.2022.05.001. arXiv: 2106.00452v1.

Preprints

V. Berthé, H. Goulet-Ouellet, C.-F. N. Brodda, D. Perrin, and K. Petersen. **Density of group languages in shift spaces**. 2024. arXiv: 2403.17892.

F. Gheeraert, H. Goulet-Ouellet, J. Leroy, and P. Stas. **Algebraic characterization of dendricity**. 2024. arXiv: 2406.15075.

F. Gheeraert, H. Goulet-Ouellet, J. Leroy, and P. Stas. **Stability properties for subgroups generated by return words**. 2024. arXiv: 2410.12534.

Teaching experience

Teacher. 2024 (in progress)

Czech Technical University in Prague. Probability and Mathematical statistics.

Introduction to SageMath. 2024

Czech Technical University in Prague. Duration: 2 h.

Teaching assistant. 2023

Université Paris Cité. Object Oriented Programming in Java.

Mini course on profinite monoid and symbolic dynamics. 2023

IRIF, Paris. Duration: 6 h.

Teaching assistant. 2015–2018

Université du Québec à Montréal.

2018	Advanced linear algebra	(teaching, grading)
2017	Theory of equations	(teaching, grading)
2017	Matrix algebra	(grading)
2016	Theory of equations	(teaching)
2015	Matrix algebra	(grading)
2015	Algorithmics	(teaching, grading)

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Talks

Conferences

Relative invertibility for primitive substitutions. July 3, 2024
Theoretical and Computational Algebra 2024, Aveiro, Portugal.

Profinite bridges between semigroup theory and symbolic dynamics. June 20–21, 2024
North British Semigroups and Applications Network 2024, Manchester, United Kingdom.

Return words and derived sequences. May 17, 2024
Student conference on Combinatorics on Words, Janov nad Nisou, Czech Republic.

Profinite approach to conjugacy of substitutive shifts. July 5, 2023
Dyadisc 6, Amiens, France.

On substitutions preserving their return sets. June 15, 2023
Words 2023, Umeå, Sweden.

Forays beyond dendricity. May 26, 2023
Numeration 2023, Liège, Belgium.

Pronilpotent quotients associated with primitive substitutions. September 5, 2022
18th Mons Theoretical Computer Science Days, Prague, Czech Republic.

A pronilpotent look at maximal subgroups of free profinite monoids. June 24, 2022
Topology, Algebra, and Categories in Logic (TACL), Coimbra, Portugal.

Suffix-connected languages. Online. July 12–16, 2021
Encontro Nacional da Sociedade Portuguesa de Matemática, Portugal.

Suffix-connected languages. Online. Poster. July 8–9, 2021
Dyadisc4, Amiens, France.

Seminars

Density of group languages in shift spaces. June 27, 2024
Algebra logic and topology seminar, University of Coimbra, Portugal.

Density of group languages in minimal shifts. Online. January 30, 2024
SymPA seminar, Université de Picardie Jules Verne, France.

Densité des langages rationnels dans les espaces symboliques. January 12, 2024
LACIM seminar, UQAM, Canada.

Density of rational languages under invariant measures. Online. October 24, 2023
One World Combinatorics on Words seminar.

Obstructions to return preservation for episturmian morphisms. September 29, 2023
Discrete Mathematics seminar, ULiège, Beligum.

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Monoïdes profinis et dynamique symbolique. August 25, 2023
LACIM seminar, UQAM, Canada.

What lies inside free profinite monoids. April 21, 2023
Automata and applications seminar, Université Paris Cité, France.

Freeness of Schützenberger groups of primitive substitutions. Online. April 29, 2022
Semigroups, automata and languages seminar, University of Porto, Portugal.

Awards

PhD scholarship. Duration: 4 years. 2018
Fundação para a Ciência e a Tecnologia.

Scholarship – 2nd cycle. Duration: 1 year. 2017
Fonds de recherche du Québec – Nature et technologies.

Alexander Graham Bell Canada Graduate Scholarships. Duration: 1 year. 2016
Natural Sciences and Engineering Research Council of Canada.

Undergraduate Student Research Award. Duration: 15 weeks. 2014, 2015 and 2016
Natural Sciences and Engineering Research Council of Canada.

Programming

- Python
- C++
- SageMath
- LaTeX
- Haskell
- Java
- Git
- GAP

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