

CURRICULUM VITAE

Herman Goulet-Ouellet 

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Employment

- Adjoint professor.** Starting 2025
Université de Moncton, New-Brunswick, Canada.
- Postdoctoral researcher.** 2024–2025
Czech Technical University, Czech Republic. Funded by the [CTU Global Postdoc Fellowship program](#). With [Štěpán Starosta](#).
- Postdoctoral researcher.** 2023
IRIF, France. Funded by the ANR [CODYS](#) project (ANR-18-CE40-0007). With [Valérie Berthé](#).

Education

- PhD in Mathematics.** With highest praise (*com Distinção e Louvor*). 2022
University of Coimbra, Portugal.
THESIS: [Schützenberger groups of minimal shift spaces](#).
ADVISORS: [Jorge Almeida](#) and [Alfredo Costa](#).
- 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, H. Goulet-Ouellet, and D. Perrin. **Density of rational languages under shift invariant measures**. In: *Proceedings of the 52nd International Colloquium on Automata, Languages, and Programming (ICALP 2025)*. 2025. doi: [10.4230/lipics.icalp.2025.143](https://doi.org/10.4230/lipics.icalp.2025.143). arXiv: [2504.16708](https://arxiv.org/abs/2504.16708).

F. Gheeraert, H. Goulet-Ouellet, J. Leroy, and P. Stas. **Algebraic characterization of dendricity**. *Electron. J. Comb.*, vol. 32, no. 1 (2025). doi: [10.37236/13326](https://doi.org/10.37236/13326). arXiv: [2406.15075](https://arxiv.org/abs/2406.15075).

F. Gheeraert, H. Goulet-Ouellet, J. Leroy, and P. Stas. **Stability properties for subgroups generated by return words**. *Eur. J. Combin.* (2025). To appear. arXiv: [2410.12534](https://arxiv.org/abs/2410.12534).

H. Goulet-Ouellet, K. Klouda, and Š. Starosta. **Circularity and repetitiveness in non-injective DFOL systems**. In: *Combinatorics on Words*. Lecture Notes in Computer Science. 2025, pp. 153–165. doi: [10.1007/978-3-031-97548-6_14](https://doi.org/10.1007/978-3-031-97548-6_14). arXiv: [2504.15828](https://arxiv.org/abs/2504.15828).

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](https://doi.org/10.1007/s00224-024-10190-y). arXiv: [2404.08072](https://arxiv.org/abs/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](https://doi.org/10.1007/s00012-023-00804-w). arXiv: [2109.07286v1](https://arxiv.org/abs/2109.07286v1).

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, pp. 77–90. doi: [10.1007/978-3-031-33180-0_6](https://doi.org/10.1007/978-3-031-33180-0_6). hal: [hal-04311379](https://hal.archives-ouvertes.fr/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](https://doi.org/10.1142/S0218196722500473). arXiv: [2109.11957v1](https://arxiv.org/abs/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](https://doi.org/10.1016/j.jalgebra.2022.05.021). arXiv: [2204.05706v1](https://arxiv.org/abs/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](https://doi.org/10.1016/j.tcs.2022.05.001). arXiv: [2106.00452v1](https://arxiv.org/abs/2106.00452v1).

Preprints

J. Almeida, A. Costa, and H. Goulet-Ouellet. **Open multiplication in relatively free profinite semigroupoids**. 2025. arXiv: [2507.08580](https://arxiv.org/abs/2507.08580).

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](https://arxiv.org/abs/2403.17892).

Teaching experience

Profinite methods in symbolic dynamics (mini course).	2025 (upcoming)
5th edition of the CANT school, Marseilles. Duration: 3 h.	
Teaching assistant.	2025
Czech Technical University in Prague. Linear algebra II.	
Teacher.	2024
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.	
Profinite monoids and symbolic dynamics (mini course).	2023
IRIF, Paris. Duration: 6 h.	
Teaching assistant.	2015–2018
Université du Québec à Montréal.	
2018 Linear algebra II	
2017 Theory of equations; Matrix algebra	
2016 Theory of equations	
2015 Matrix algebra ; Algorithmic	

Talks

Conferences

Density of rational languages under invariant probability measures.	Jul. 7, 2025
Dyadisc 8, Amiens, France.	
Circularity and repetitiveness in non-injective DFOL systems.	Jun. 30, 2025
Words 2025, Nancy, France.	
Algebraic stability of return words.	May. 2, 2025
Conference on Combinatorics on words, Janov nad Nisou, Czech Republic.	
Facteurs bispéciaux dans les systèmes DOL et comment les calculer.	Feb. 3, 2025
Journées de combinatoire de Bordeaux 2025, France.	

Relative invertibility for primitive substitutions. Jul. 3, 2024

Theoretical and Computational Algebra 2024, Aveiro, Portugal.

Profinite bridges between semigroup theory and symbolic dynamics. Jun. 20, 2024

North British Semigroups and Applications Network 2024, Manchester, United Kingdom.

Return words and derived sequences. May. 17, 2024

Conference on Combinatorics on words, Janov nad Nisou, Czech Republic.

Profinite approach to conjugacy of substitutive shifts.. Jul. 5, 2023

Dyadisc 6, Amiens, France.

On substitutions preserving their return sets. Jun. 15, 2023

Words 2023, Umeå, Sweden.

Forays beyond dendricity. May. 26, 2023

Numeration 2023, Liège, Belgium.

Pronilpotent quotients associated with primitive substitutions. Sept. 5, 2022

18th Mons Theoretical Computer Science Days, Prague, Czech Republic.

A pronilpotent look at maximal subgroups of free profinite monoids. Jun. 24, 2022

Topology, Algebra, and Categories in Logic (TACL), Coimbra, Portugal.

Suffix-connected languages. Online. Jul. 12–16, 2021

Encontro Nacional da Sociedade Portuguesa de Matemática, Portugal.

Suffix-connected languages. Online. Poster. Jul. 8–9, 2021

Dyadisc4, Amiens, France.

Seminars

Density of rational languages under invariant probability measures. May. 2, 2025

Semigroups, automata and languages seminar, University of Porto, Portugal.

Density of group languages under ergodic probability measures. Mar. 17, 2025

G²OAT seminar, Czech Technical University in Prague, Czech Republic.

Densités des langages à groupe sous les mesures ergodiques. Mar. 4, 2025

Ernest seminar, Institut de mathématiques de Marseille, France.

Density of group languages under ergodic measures. Feb. 28, 2025

Automata and applications seminar, Université Paris Cité, France.

Inversibilité relative des substitutions. Feb. 25, 2025

SymPA seminar, Université de Picardie Jules Verne, France.

Density of group languages in shift spaces. Algebra logic and topology seminar, University of Coimbra, Portugal.	Jun. 27, 2024
Density of group languages in minimal shifts. Online. SymPA seminar, Université de Picardie Jules Verne, France.	Jan. 30, 2024
Densité des langages rationnels dans les espaces symboliques. LACIM seminar, UQAM, Canada.	Jan. 12, 2024
Density of rational languages under invariant measures. Online. One World Combinatorics on Words seminar.	Oct. 24, 2023
Obstructions to return preservation for episturmian morphisms. Discrete Mathematics seminar, ULiège, Belgium.	Sept. 29, 2023
Monoïdes profinis et dynamique symbolique. LACIM seminar, UQAM, Canada.	Aug. 25, 2023
What lies inside free profinite monoids. Automata and applications seminar, Université Paris Cité, France.	Apr. 21, 2023
Freeness of Schützenberger groups of primitive substitutions. Online. Semigroups, automata and languages seminar, University of Porto, Portugal.	Apr. 29, 2022

Awards

PhD scholarship. Duration: 4 years. Fundação para a Ciência e a Tecnologia.	2018
Scholarship – 2nd cycle. Duration: 1 year. Fonds de recherche du Québec – Nature et technologies.	2017
Alexander Graham Bell Canada Graduate Scholarships. Duration: 1 year. Natural Sciences and Engineering Research Council of Canada.	2016
Undergraduate Student Research Award. Duration: 15 weeks. Natural Sciences and Engineering Research Council of Canada.	2014, 2015 and 2016

For the scientific community

Event organization

Algebraic aspects of symbolic dynamics.

Jul. 2024

Thematic session in the conference on Theoretical and Computational Algebra (Portugal).

Refereeing and reviews

Journals. European Journal of Combinatorics, Publicacions Matemàtiques.

Conferences. CIAA 2024, Words 2025, MFCS 2025.

MathSciNet. MR4587910, MR4525309, MR4486114, MR4661008.

Programming

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