

Employment and education

- 2024– **Postdoc**, LAMFA, Université de Picardie Jules Verne
- 2021–2024 **PhD**, LISN, Université Paris Saclay, supervised by Nathalie Aubrun,
Title : "Subshifts of Finite Type on Groups : Emptiness and Aperiodicity"
- 2020–2021 **Master 2 Mathématiques fondamentales**, I2M, Université d'Aix-Marseille, supervised by
Pierre Guillot and Etienne Moutot, Title : "Domino Problem on Groups"
- 2019–2020 **Master in Applied Mathematics**, Universidad de Chile, supervised by Alejandro Maass and
Sebastián Donoso, Title : "Contributions to the study of distortion in automorphism groups"
- 2014–2019 **Civil Mathematical Engineering**, Universidad de Chile
- 2017–2018 **Minor in Quantum Physics**, Universidad de Chile
- 2014–2018 **Bachelor's degree in engineering sciences, mention mathematics**, Universidad de Chile

Publications

Journals

- 2025 **Realizability of Subgroups by Subshifts of Finite Type**,
Groups, Geometry and Dynamics (to appear), <https://doi.org/10.4171/ggd/900>
- 2024 **Self-Avoiding Walks on Cayley Graphs Through the Lens of Symbolic Dynamics**,
with Nathalie Aubrun, <https://doi.org/10.37236/13065>,
Electronic Journal of Combinatorics issue 31 volume 4, article number P4.24, 44 pages
- 2024 **Strongly Aperiodic SFTs on Generalized Baumslag-Solitar groups**,
with Nathalie Aubrun and Sacha Huriot-Tattergrain,
<https://doi.org/10.1017/etds.2023.44>,
Ergodic Theory and Dynamical Systems issue 44 volume 5 pages 1209-1238
- 2022 **Computational Complexity of Biased Diffusion-Limited Aggregation**,
with Eric Goles and Pedro Montealegre, <https://doi.org/10.1137/18M1215815>,
SIAM Journal on Discrete Mathematics volume 36 issue 1 pages 823-866

Book Chapters

- 2022 **Distortion in Automorphisms of Expansive Systems**, with Sebastián Donoso and Alejandro
Maass, https://doi.org/10.1007/978-3-030-92551-2_3,
Automata and Complexity : Essays Presented to Eric Goles on the Occasion of His 70th
Birthday, pp 21–41, 2022

Conference Proceedings

- 2024 **Contributions to the Domino Problem : Seeding, Recurrence and Satisfiability**,
pages 17:1 - 17:18, <https://doi.org/10.4230/LIPIcs.STACS.2024.17>,
41st International Symposium on Theoretical Aspects of Computer Science (STACS 2024)
- 2023 **Domino Snake Problems on Groups**, with Nathalie Aubrun, pages 46-59,
https://doi.org/10.1007/978-3-031-43587-4_4
24th International Symposium on Fundamentals of Computation Theory (FCT 2023)

Pré-publications

- 2025 **A general framework for quasi-isometries in symbolic dynamics beyond groups**, with
Sebastián Barbieri, arXiv Preprint,
<https://arxiv.org/abs/2504>.

Talks, seminar and event organization

Invited talks

- 12/2025 **Dynamics in Patagonia**, Substitutive and S-adic systems beyond abelian groups,
<https://eventos.cmm.uchile.cl/maass60/>
- 07/2025 **Dyadisc 8**, Understanding subshifts and cellular automata on groups through snakes,
<https://dyadisc8.sciencesconf.org/>
- 12/2024 **Dyadisc 7**, Substitutions on countable groups,
<https://dyadisc7.sciencesconf.org/>
- 06/2024 **TCA 2024**, Self-Avoiding Walks and Symbolic Dynamics,
<https://sites.google.com/fct.unl.pt/t-c-algebra/homepage>

International Conferences

- 03/2024 **STACS 2024**, Contributions to the Domino Problem : Seeding, Recurrence and Satisfiability
- 09/2023 **FCT 2023**, Domino Snake Problems on Groups

Seminars, workshops, and national meetings

- 01/2026 **Dynamical Systems Seminar**, Topological minimal self-joinings on groups, Jagiellonian University, Kraków
- 08/2025 **Seminario de Sistemas Dinámicos**, Sistemas substitutivos y S-ádicos en grupos, Universidad de Chile, Santiago
- 06/2025 **Journées sda2**, Subshifts of finite type and quasi-isometries beyond groups, LIRMM, Montpellier
- 04/2025 **Séminaire Algorithmique GREYC**, Subshifts of finite type and quasi-isometries beyond groups, GREYC, Caen
- 04/2025 **Séminaire Rauzy**, Systèmes S-adiques et substitutifs au-delà des groupes abéliens, I2M, Marseille
- 03/2025 **Mocqua Seminar**, Subshifts of finite type and quasi-isometries beyond groups, LORIA, Nancy

- 03/2025 **Groupe de travail en Probabilités, Théorie Ergodique et Systèmes Dynamiques**, *S-adic and substitutive systems for countable groups*, LMRS, Rouen
- 11/2024 **Séminaire SymPA**, *Symbolic Dynamics, Groups and Self-Avoiding Walks*, LAMFA, Amiens
- 05/2024 **Journées sda2**, *Are Cayley graphs diabolical?*, LIFO, Orléans
- 02/2024 **Complexity of Simple Dynamical Systems in honor of Jarkko Kari's 60th birthday**, *Snakes, SAWs and Symbolic Dynamics*, CIRM, Marseille
- 02/2024 **Research School in Discrete Mathematics and Computer Science**, *Substitutions and Hierarchical Structures on Countable Groups*, CIRM, Marseille
- 12/2023 **XCI Encuentro Anual de la SOMACHI**, *Caminos Autoevitantes desde la Dinámica Simbólica*, Universidad de Chile, Santiago
- 09/2023 **Séminaire des Mathématiques Discrètes**, *Domino Snake Problems on Groups*, Université de Liège
- 08/2023 **Seminario de Sistemas Dinámicos**, *SFTs Aperiódicos para Grupos de Baumslag-Solitar Generalizados*, Universidad Católica de Chile, Santiago
- 08/2023 **Coloquio DMCC**, *Problema del Dominó y Aperiodicidad en grupos*, Universidad de Santiago de Chile
- 06/2023 **EJCIM 2023**, *Dissecting the Infinite Domino Snake Problem*, XLIM, Poitiers
- 05/2023 **Journées des Doctorants 2023**, *Subshifts of Finite Type on Groups - Emptiness and Aperiodicity*, LISN, Gif-sur-Yvette
- 04/2023 **Séminaire SePAG**, *An Invitation to the Domino Problem*, LISN, Gif-sur-Yvette
- 03/2023 **Journées sda2**, *Realizability of Subgroups by SFTs*, Institut de Mathématiques de Toulouse
- 03/2023 **Journées de l'ANR C_SyDySi**, *The Domino Snake Problem*, LIFO, Orléans
- 03/2023 **Séminaire GALaC**, *The Domino Snake Problem*, LISN, Gif-sur-Yvette
- 01/2023 **Séminaire Doctorant**, *Symbolic dynamics on groups : Emptiness and Aperiodicity*, LAMFA, Amiens
- 01/2023 **Séminaire DGeCo**, *Symbolic dynamics on groups : Emptiness and Aperiodicity*, IMJ-PRG, Paris
- 10/2022 **Séminaire SymPA**, *Strongly Aperiodic SFTs on Generalized Baumslag-Solitar groups*, LAMFA, Amiens
- 06/2022 **Journées sda2**, *Strongly Aperiodic SFTs on Generalized Baumslag-Solitar groups*, Université de Liège
- 05/2022 **Séminaire GALaC**, *Tiling Groups : Emptiness and Aperiodicity*, LISN, Gif-sur-Yvette
- 07/2021 **Groupe de Travail Pytheas Fogg**, *Les simulations sur le groupe d'allumeur de réverbères*, I2M, Marseille
- 12/2017 **Automata Factory**, *Computational Complexity of restricted Diffusion Limited Aggregation*, Universidad Adolfo Ibáñez, Santiago

Posters

- 05/2024 **Young Geometric Group Theory XII**, *The k -SAT Problem on Groups*, University of Bristol
- 02/2024 **GATGA 2024**, *Sofic Skeletons*, CIRM

Article reviews

- 2025 **Groups, Geometry and Dynamics, Transactions of the AMS, Discrete and Continuous Dynamical Systems**
- 2023 **Mathematical Foundations of Computer Science (MFCS)**
- 2019-2021 **International Journal of Modern Physics C**

Organization of events

- 07/2025 **Dyadisc 8**, LAMFA, Amiens, <https://dyadisc8.sciencesconf.org/>
- 12/2024 **Dyadisc 7**, LAMFA, Amiens, <https://dyadisc7.sciencesconf.org/>

Teaching, supervision and scientific communication

Teacher

- 2023 - 1 **Algèbre linéaire, formes normales et applications**, Préparation à l'agrégation externe de Mathématiques d'Orsay et ENS Paris-Saclay, Option C : algèbre et calcul formel, 6h

Teaching assistant

- 2026 - 1 **Probabilités et Statistique**, UFR des sciences - Université de Picardie Jules Verne, TD, L1, 18h
- 2023 - 2 **Projet "Installation d'un poste pour le développement"**, IUT d'Orsay, TP, L1, 16h
Intro. aux systèmes d'exploitation et à leur fonctionnement, IUT d'Orsay, TP, L1, 16h
Intro. à l'architecture des ordinateurs, IUT d'Orsay, TP, L1, 16h
Algorithmique, Polytech Paris-Saclay, TD et TP, L2, 32h
- 2022 - 2 **Tris et complexité**, Préparation à l'agrégation externe de Mathématiques d'Orsay et ENS Paris-Saclay, Option C : algèbre et calcul formel, TP, 6h
Mathématiques 1, Polytech Paris-Saclay, TD, L1, 32h
Programmation Impérative, UFR des sciences - Université Paris-Saclay, TP, L1, 24h
- 2022 - 1 **Sécurité et sûreté**, UFR des sciences - Université Paris-Saclay, TD, L3, 24h
- 2021 - 2 **Programmation Impérative**, UFR des sciences - Université Paris-Saclay, TD et TP, L1, 42h
- 2020 - 1 **Análisis Funcional**, Universidad de Chile, Master 1, 32h
- 2019 - 1 **Variable Compleja y Funciones Especiales**, Universidad de Chile, L3, 32h
Calculabilidad y Complejidad Computacional, Universidad de Chile, Master 1, 32h
- 2017 - 2 **Elementos del Álgebra**, Universidad de Chile, L3, 32h
- 2017 - 1 **Cálculo en Varias Variables**, Universidad de Chile, L2, 32h
- 2015 - 1 **Álgebra Lineal**, Universidad de Chile, L1, 32h

Supervision

2024 **Raphaël Evrard**, stage de L3, co-supervised with Nathalie Aubrun,
Subject : Bi-infinite geodesics on the Heisenberg and Baumslag-Solitar groups

Scientific Communication

11/2024 **Journée Régionale de l'APMEP, Picardie**, *Les machines de Turing et les limites du calcul*

12/2023 **Semaine de la recherche de la GS ISN**, *Tuiles de Wang et apérioricité*,
with Nathalie Aubrun et Pierre Béaur

Awards, grants and qualifications

2025 **Qualification MCF**, Sections 25 and 27 of the CNU

2021 **PhD grant**, École Doctorale STIC, Université Paris-Saclay

2020 **Master 2 grant**, Institut Archimède, Aix-Marseille Université

2019 **Romberg Grant for candidates selected to the 7th Heidelberg Laureate Forum**, Heidelberg University

2019 **CONYCIT Master grant**, Comisión Nacional de Investigación Científica y Tecnológica, Chile

2015–2018 **Outstanding student**, Escuela de Ingeniería y Ciencias, Universidad de Chile, Awarded to students who have achieved outstanding results in all their courses.

2014 **Andrés Bello grant**, Universidad de Chile, Distinction for excellent score in national selection test

2012 **Bronze Medal**, Olimpiada Iberoamericana de Física

Miscellaneous

Languages Spanish (native), English (fluent), French (fluent).

Programming Unix, Python, L^AT_EX, Sage, C++

Hobbies Birdwatching, running, history, photography and guitar