Nicolás Bitar

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Education

2024–present	**Postdoctorate**, *LAMFA, Université de Picardie Jules-Verne.*
2021–2024	**PhD in Discrete Mathematics and Computer Science**, *Université Paris-Saclay*, Supervisor: Nathalie Aubrun.
2020–2021	**Masters in Fundamental Mathematics**, *Université d'Aix-Marseille.*
2019–2020	**Masters in Engineering Science, Applied Mathematics**, *Universidad de Chile.*
2014–2019	**Mathematical Engineering**, *Universidad de Chile.*
2017–2018	**Minor in Quantum Physics**, *Universidad de Chile.*
2014–2018	**Bachelor's degree in Engineering Sciences, mention in Mathematics**, *Universidad de Chile.*

Publications

Journals

2024	**Self-Avoiding Walks on Cayley Graphs Through the Lens of Symbolic Dynamics**, *Electronic Journal of Combinatorics (to appear)*, Nathalie Aubrun, N.B.
2024	**Strongly Aperiodic SFTs on Generalized Baumslag-Solitar groups**, *Ergodic Theory and Dynamical Systems 44(5):1209-1238*, Nathalie Aubrun, N.B., Sacha Huriot-Tattergrain.
2022	**Computational Complexity of Biased Diffusion-Limited Aggreagation**, *SIAM Journal on Discrete Mathematics 36(1):823-866*, N.B., Eric Goles, Pedro Montealegre.

Pre-prints

2024	**Realizability of Subgroups by Subshifts of Finite Type**, *arXiv Preprint - submitted*, N.B.
2023	**Computability of Domino Snake Problems on Finitely Generated Groups**, *submitted*, Nathalie Aubrun, N.B.

Conference Proceedings

2024	**Contributions to the Domino Problem: Seeding, Recurrence and Satisfiability**, *41st International Symposium on Theoretical Aspects of Computer Science 2024*, N.B.
2023	**Domino Snake Problems on Groups**, *International Symposium on Fundamentals of Computation Theory 2023*, Nathalie Aubrun, N.B.

Book Chapters

2022	**Distortion in Automorphisms of Expansive Systems**, *Automata and Complexity: Essays Presented to Eric Goles on the Occasion of His 70th Birthday*, N.B., Sebastián Donoso, Alejandro Maass.

Memoires and Thesis

2024	**Subshifts of Finite Type on Groups: Emptiness and Aperiodicity**, *PhD Thesis*, Université Paris-Saclay.
2021	**Domino Problem on Groups**, *Mémoire Master 2*, Aix-Marseille Université.
2020	**Contributions to the study of distortion in automorphism groups**, *Memoria Magíster en Ciencias de la Ingeniería, Mención Matemáticas Aplicadas*, Universidad de Chile.

Selected Talks & Presentations

International Conferences

| 03/2024 | **Contributions to the Domino Problem: Seeding, Recurrence and Satisfiability**, *Clermont-Ferrand*, STACS 2024. |
| 09/2023 | **Domino Snake Problems on Groups**, *Universität Trier*, 24th International Symposium on Fundamentals of Computation Theory 2023. |

Invited Talks

| 03/2024 | **Self-Avoiding Walks and Symbolic Dynamics**, *Aveiro, Portugal*, Theoretical and Computational Algebra 2024. |

Seminars, Work Groups and National Meetings

05/2024	**Are Cayley graphs diabolical?**, *Orléans*, Journées sda2 2024.
02/2024	**Snakes, SAWs and Symbolic Dynamics**, *CIRM, Marseille*, Complexity of Simple Dynamical Systems in honor of Jarkko Kari's 60th birthday.
02/2024	**Substitutions and Hierarchical Structures on Countable Groups**, *CIRM, Marseille*, Research School in Discrete Mathematics and Computer Science.
12/2023	**Caminos Autoevitantes desde la Dinámica Simbólica**, *Universidad de Chile*, XCI Encuentro Anual de la SOMACHI.
08/2023	**SFTs Aperiódicos para Grupos de Bausmlag-Solitar Generalizados**, *Universidad Católica de Chile*, Seminario de Sistemas Dinámicos.
03/2023	**Realizability of Subgroups by SFTs**, *Institut de Mathématiques de Toulouse*, Journées sda2 2023.
01/2023	**Symbolic dynamics on groups: Emptiness and Aperiodicity**, *IMJ-PRG, Paris*, Séminaire DGeCo.
06/2022	**Strongly Aperiodic SFTs on Generalized Baumslag-Solitar groups**, *Université de Liège*, Journées sda2 2022.

Reviews

| 2023 | **Mathematical Foundations of Computer Science (MFCS)**. |
| 2019-2021 | **International Journal of Modern Physics C**. |

Teaching

Lecturer

| Fall 2023 | **Linear algebra, normal forms and applications**, *Préparation à l'agrégation externe de Mathématiques d'Orsay et ENS Paris-Saclay, Option C: algèbre et calcul formel*, 6h. |

Teaching Assistant

Spring 2023	**Introduction to Operating Systems**, *IUT d'Orsay*, TP, 1st year, 16h.
	Introduction to Computer Architecture, *IUT d'Orsay*, TP, 1st year, 16h.
	Algorithms and Complexity, *Polytech Paris-Saclay*, TD et TP, 2nd year, 28h.
Spring 2022	**Sorting and Complexity**, *Préparation à l'agrégation externe de Mathématiques d'Orsay et ENS Paris-Saclay, Option C: algèbre et calcul formel*, TP, 6h.
	Mathematics 1, *Polytech Paris-Saclay*, TD, 1st year, 32h.
	Introduction to Imperative Programming, *Université Paris-Saclay*, TP, 1st year, 24h.
Fall 2022	**Safety and Security**, *Université Paris-Saclay*, TD, 3rd year, 24h.
Spring 2021	**Introduction to Imperative Programming**, *Université Paris-Saclay*, TD/P, 1st year, 42h.
Fall 2020	**Functional Analysis**, *Universidad de Chile*, Master 1, 32h.
Fall 2019	**Complex Analysis and Special Functions**, *Universidad de Chile*, 3rd year, 32h.
	Computability and Computational Complexity, *Universidad de Chile*, Master 1, 32h.
Spring 2017	**Abstract Algebra**, *Universidad de Chile*, 3rd year, 32h.
Fall 2017	**Multivariable Calculus**, *Universidad de Chile*, 2nd year, 32h.
Spring 2015	**Linear Algebra**, *Universidad de Chile*, 1st year, 32h.

Grader

Fall 2016	**Introduction to Algebra**, *Universidad de Chile*, 1st year, 32h.

Supervision

2024	**Raphaël Evrard**, *L3 internship*, co-supervised with Nathalie Aubrun.

Awards and Scholarships

2021	**PhD grant**, *Ecole Doctorale STIC*, Université Paris-Saclay.
2020	**Master 2 grant**, *Institut Archimède*, Aix-Marseille Université.
2019	**Romberg Grant for selected participants of 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 remarkable performances on all their courses.
2014	**Andrés Bello Scholarship**, *Universidad de Chile*, Awarded for outstanding admission score in the national selection test for engineering.
2012	**Bronze Medal**, *Olimpiada Iberoamericana de Física*.

Miscellaneous

Languages	Spanish (maternal), English (fluent), French (fluent).
Programming	Unix, Python, LATEX, Sage, C++.
Interests	Birdwatching, Running, Trail Running, History, Photography, Philosophy, Music, Guitar, and Bass Guitar.