

# Phalempin Maxence | CV

407 South Dowling street – 2010 Sydney – Australia

✉ m.phalempin@unsw.edu.au

Academic adress : Anita B. Lawrence Centre, Room 4089, University of New South Wales, Kensington 2033 New South Wales, Australia.

Personal webpage : <https://maxence-phalempin.github.io/home-page/>

## Academic curriculum

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- 2024–present Postdoctoral fellow in the ARC laureate team in dynamical systems and data at the University of New South Wales,
- 2022 – 2024 Postdoc at Università degli Studi di Firenze, "Probabilistic aspects and geometrical properties of interacting random systems."
- 2019 – 2022 Ph.D from University of Western Brittany  
-Title : "Stochastic properties in hyperbolic dynamical systems with infinite measure"  
-Advisor : Françoise Pène
- 2015 – 2019 Normalien (remunerated student) in Mathematics at Ecole Normale Supérieure de Rennes (high honors)
- 2018 – 2019 M2.Sc of mathematics and applications in Rennes (high honors)
- 2017 – 2018 Passing Agrégation in mathematics (competitive exam for teaching in high school or undergraduate studies at university) with option in theoretical computer sciences (Rank 45<sup>th</sup>/315)
- 2016 – 2017 Bachelor in Physics in Rennes (with honors)
- 2015 – 2016 Bachelor in mathematics in Rennes (with honors)
- 2012 – 2015 CPGE (Classe préparatoire aux grandes écoles) MPSI-MP\* at Lycée Saint Louis (Paris VI<sup>th</sup>)

languages.....

French : native language

English : fluent (English assesment, TOEIC 880/990)

Italian : notions

computer sciences.....  
programming languages : Caml, Python  
formal/numeric calculus : scilab, maple

## Publication

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keywords : ergodic theory, hyperbolic dynamics, perturbed operator, probability, statistical physics, rare events.

Submitted article :

"Limit theorems for self-intersecting trajectories in  $\mathbb{Z}$ -extensions"  
(arXiv:2201.01980) submitted to Communications in Mathematical Physics in December 2022 revised in July 2023 and accepted for publication in February 2024.

"An alternative approach to large deviations for the almost-critical Erdős-Rényi random graph" (arXiv:2312.16941) Joint work with Gianmarco Bet and Luisa Andreis, submitted in December 2023

"Averaging theorems for slow fast systems in  $\mathbb{Z}$ -extensions (discrete time)"  
(arXiv:2401.11277) accepted in Ann. Henri Poincaré, 40p in October 2024

"Slow-fast systems in infinite measure, with or without averaging" (arXiv:2408.03009) submitted in June 2024

"Rare events statistics for  $\mathbb{Z}^d$  map lattices coupled by collision" (arXiv:2412.12803) Joint work with Wael Bahsoun, submitted in December 2024

## Pedagogic activities, administrative duties and other research involvement

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- Teaching load (2019-2022) involving exercises sessions in probability theory, topology in  $\mathbb{R}^n$ , statistics and complements for agregation.
- "Fête de la science" (2019 and 2021) : popularization event settled for wide audience, consisting in providing quick activities involving mathematical concepts.
- Organization of Ph.D students seminars in Brest (2020-2021).
- Participation into some Ph.D students seminars :
  - Brest (early 2020): "Construction of measures for topological dynamics."
  - Rennes Ph.D students seminar in probability (2021): "Mixing measures in hyperbolic dynamics."
  - Brest (2021): "Introduction on transfer operators : from Markov chain to Anosov flows."

- Amiens (2022) : "Introduction to transfer operator in studying limit theorems for hyperbolic dynamical systems"
- Ph.D referee at the mathematics department council of Brest (2019-2021)
  - Ph.D referee at the mathematics laboratory (LMBA) council of Brest (2021-2022)
  - Review of articles for SIAM Journal on Applied Dynamical Systems (SIADS) and Transactions of the AMS.

## **Lectures in talks.**

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- Dynamical system session at the joint meeting of the AustMS, NZMS and AMS, 8-13 December 2024, Auckland (New Zealand)
- Geometry topology and dynamic seminar, University of Paris-Saclay, 23 May 2024
- Dynamical system seminar, Paris-Nord Sorbonne University, 15 May 2024
- Rauzy seminar in dynamical system and geometry, Aix-Marseille university, 12 April 2024
- Workshop "Rare events in dynamical systems" at ESI, 18-22 March 2024, Wien (Austria)
- Dynamics Seminar at Centro de Giorgi, 14 November 2023, Pisa (Italy)
- Workshop "Limit Theorems for Slowly Mixing Systems", ICMS, 6-10 June 2022 Edimbourg Edimbourg (United Kingdom)
- dynamical systems and probability seminar, team SYMPA, 22 February 2022, Amiens (France)
- Winter school on Billiards 17-21 January, Autrans (France)
- LPSM ergodic theory seminar, Sorbonne University Pierre et Marie Curie (Paris VI) 3 January 2022
- dynamical system seminar, Aix-Marseille university 30 november 2021
- Colloquium young probabilists and statisticians 28 October 2021, Saint Pierre d'Oléron (France).
- Annual meeting of GDR AMA (Auto similarity and Multifractal Analysis) 27 September 2021 Porquerolles (France).
- Ergodic theory seminar in Rennes I, 20 September 2021
- Dynamical systems and probability seminar, University of Brest, 4 March 2021

## **Other research experience and attended talks**

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- Workshop research group GALS at IHES, 10-12 January 2024 Orsay (France)
- Days in Probability and Statistical Physics, Firenze 20 November 2023
- Conference on Dynamics and Finance: from KAM Tori to ETFs, ICTP Trieste, 9-13 October 2023
- Conference "Regular and Stochastic Behavior in Dynamical Systems" Pisa 5-9 June 2023
- Conference "Probabilistic methods in dynamics" Pisa 29 May - 1 June 2023

- Conference "Statistical and Computational Aspects of Dynamics" Pisa 13-16 December 2022
- Conference "Probabilistic techniques for random and time-varying dynamical systems". CIRM 3-7 October 2022
- Poster at GDR PLATON Young researchers days CIRM 15-17 November 2021
- Finisterian summer school in dynamical systems (GDR PLATON), University of Brest 21-25 June 2021
- Spring School on Transfer Operators (Classical and Modern Techniques) Lausanne (actually online) 22-26 March 2021
- Stochastic Processes under Constraints, MFO Oberwolfach (hybrid meeting), 27-3 October 2020
- Conference in Thermodynamic Formalism: Dynamical Systems, Statistical Properties and their Applications. CIRM 9-13 December, 2019
- Lebesgue Doctoral days 28-30 October 2019
- Workshop in Thermodynamic Formalism : Ergodic Theory and Validated Numerics CIRM 8-12 July 2019
- The sixth workshop of the Italian dynamicists, Dinamici VI, Pisa 4-7 June 2019
- Ergodic Theory, Probabilities and interactions, Days in Honor of Emmanuel Lesigne University of Tours 27-29 May 2019