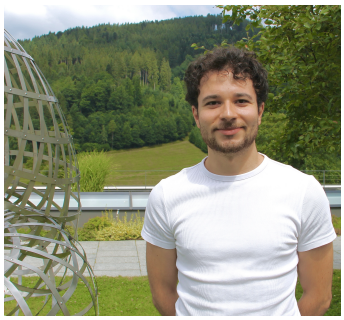
Curriculim Vitae



Nelson Schuback

PhD Candidate in Mathematics

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Languages

Portuguese	●●●●●
French	○●●●●
English	○●●●●
Spanish	○○●●●

Profile

PhD candidate in Mathematics at Sorbonne University (IMJ-PRG), supervised by Patrice Le Calvez. My research interests lie in low-dimensional topology and dynamical systems. In particular :

- Surface homeomorphisms
- Brouwer theory
- Planar foliations
- Big mapping class groups

Education

PhD in Mathematics **2021 – 2025**
Sorbonne University Paris, France
Supervisor : Patrice Le Calvez
Institut de Mathématiques de Jussieu (IMJ-PRG)

Master in Applied Mathematics **2019 – 2021**
University of São Paulo São Paulo, Brazil
Advisor : Salvador Addas Zanata
Institute of Mathematics and Statistics (IME-USP)

Bachelor of Molecular Sciences (Mathematics Major) **2015 – 2019**
University of São Paulo São Paulo, Brazil
Advisor : Salvador Addas Zanata
Molecular Sciences Program (CCM-USP)

Scholarships and Awards

- **COFUND MathInParis2020 - PhD Fellowship (2021–2024)**
  Fondation Sciences Mathématiques de Paris (FSMP), Marie Sklodowska-Curie Actions, Paris, France.
- **FAPESP Master's Research Fellowship (2019–2021)**
  São Paulo Research Foundation (FAPESP), São Paulo, Brazil.
- **FAPESP Scientific Initiation Fellowship (2017–2019)**
  São Paulo Research Foundation (FAPESP), São Paulo, Brazil.

Publications and Preprints

- **An index theory for Transverse Trajectories** (arXiv preprint).
  Submitted to arXiv 8 december 2025.
- **An alternative approach to Homotopy Brouwer Theory** (arXiv preprint).
  Submitted to arXiv 8 december 2025.
- **Refined methods in Foliated Brouwer Theory** (arXiv preprint), arXiv :2510.17616, October 2025. DOI : https://doi.org/10.48550/arXiv.2510.17616.
- **A synthesis on classical Brouwer theory**, 2021. Master's dissertation, Institute of Mathematics and Statistics, University of São Paulo. DOI : https://doi.org/10.11606/D.45.2021.tde-30032022-114757.

Teaching

Sorbonne Université (UFR 929 - Mathématiques)

— Spring 2025 : LU2MA122 – Algèbre linéaire et bilinéaire II (Colles - 10h).

— Spring 2025 : LU1MA003 – Mathématiques approfondies (52h).

— Fall 2023 and Fall 2024 : LU1MA001 – Mathématiques pour les études scientifiques I (52h) + (104h).

— Spring 2023 : LU1MA003 – Mathématiques approfondies (52h).

— Fall 2022 : LU2MA216 – Topologie et calcul différentiel I (36h).

— Spring 2022 : LU1MA003 – Mathématiques approfondies (52h).

University of São Paulo

— Fall 2020 : MAP0327 – Classical Analytical Mechanics (42h).

— Fall 2019 : CCM0213 – Mathematics III (42h).

— Spring 2017 : CCM0123 – Mathematics II (42h).

— Fall 2016 : CCM0113 – Mathematics I (42h).

Talks

2025

— *Un point de vue feuilleté sur la théorie de Brouwer homotopique*, Géométrie & Dynamique à Aussois, 8ème édition, Centre Paul Langevin, Aussois, France.

2024

— *What is rotation theory on surfaces ?*, PhD Students' Seminar, IMJ-PRG, Paris, France.

— *Maryam Mirzakhani and non-Euclidean geometry*, série de pré-conférences : "Un texte, un mathématicien 2024", Lycée Blaise Pascal d'Orsay, Orsay, France.

— *Isotopy classes of Brouwer homeomorphisms relative to $r > 0$ orbits*, GDT Dynamiques Sauvages, IMJ-PRG, Paris, France.

— *Isotopy classes of Brouwer homeomorphisms relative to $r > 0$ orbits*, Dynamical Systems Seminar, IMRL-UdelaR, Montevideo, Uruguay.

2023

— *Homotopy Brouwer theory meets transverse foliations*, Surfaces in Banyuls, Oceanological Observatory of Banyuls, Sorbonne Université, Banyuls-sur-Mer, France.

— *Homological rotation set of Axiom A diffeomorphisms*, GDT Dynamiques Sauvages, IMJ-PRG, Paris.

— *Periodic orbits of Hamiltonian homeomorphisms on surfaces*, GDT Dynamiques Sauvages, IMJ-PRG, Paris.

2022–2019

— *Genericity of transverse homoclinic intersections for conservative surface diffeomorphisms*, GDT Dynamiques Sauvages, IMJ-PRG, Paris.

— *Applications of prime-ends rotation sets to conservative surface diffeomorphisms*, GDT Dynamiques Sauvages, MJ-PRG, Paris.

— *C^k-linearization of non-resonant hyperbolic fixed points*, GDT Dynamiques Sauvages, IMJ-PRG, Paris.

— *On the Weinstein conjecture for overtwisted contact 3-manifolds*, Seminar on Symplectic Topology, IMPA.

— *Positive entropy for torus homeomorphisms with rotation set of non-empty interior*, Topological Surface Dynamics course seminars, IME-USP.

— *A non-ergodic minimal real-analytic conservative diffeomorphism*, Ergodic Theory course (IME-USP).

Conferences Co-organized

— **Surfaces in Banyuls**, Conference on recent developments in surface dynamics and topology, Oceanological Observatory of Banyuls (Sorbonne University), 2023.

— **VI Paulista Meeting of Students in Dynamics**, Student-organized conference on dynamical systems, University of Campinas (UNICAMP), 2020.

Conference Participation

— **Dynamique à Aussois, 8ème édition**, Centre Paul Langevin, Aussois, France (2025).

— **International Conference in Dynamical Systems**, Chern Institute of Mathematics, Tianjin, China (2025).

— **Dynamische Systeme**, Mathematisches Forschungsinstitut Oberwolfach (MFO), Germany (2025).

— **Surfaces in Banyuls**, Oceanological Observatory of Banyuls, Banyuls-sur-Mer, France (2023).

— **Topics on the Geometry of Locally Symmetric Spaces**, UdelaR, Montevideo, Uruguay (2023).

— **Big Mapping Class Groups and Diffeomorphism Groups**, CIRM, Marseille, France (2022).

— **School on Dynamical Group Theory**, University of Bourgogne, Dijon, France (2022).

— **Global and Local Aspects in Dynamical Systems (GLADS 2022)**, CRM, Barcelona, Spain (2022).

— **Topological Dynamics Workshop (TOPDIN 2020)**, UFF, Rio de Janeiro, Brazil (2020).

— **9th annual Undergraduate Poster Competition at KAUST**, KAUST, Thuwal, Saudi Arabia (2020).

— **5th Brazilian School of Dynamical Systems**, UFMG, Belo Horizonte, Brazil (2019).