

Alejo García-Sassi

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SUMMARY

- **Research focus in dynamical systems, ergodic theory, geometry and topology;** emphasis on low-dimensional dynamics and interactions with applications (e.g. astrodynamics).
- **1 published paper** in *Fundamenta Mathematicae*.
- **2 research articles under consideration** by leading journals (*Memoirs of the AMS*, *ASENS*).
- **Active international collaboration network**, including ongoing work with researchers at USP, UdelaR, and IMJ-PRG (Sorbonne Université), with multiple research visits.
- **Growing academic service profile:** referee for *Proceedings of the AMS* and co-organizer of the *Seminar on Dynamical Systems and Geometry* at USP.
- **Supervision experience:** co-supervised 1 Master's student (completed in 2026).
- **Strong speaking activity:** invited talks, seminars, and a minicourse at international venues.
- **13 years of teaching experience** (11 at university level); consistently strong evaluations.
- **Sustained outreach activity:** co-founding and coordination of TMU project; science events, large-scale workshops, media contributions, and a popular-science book in preparation.
- **Competitive fellowship record**, including Master's, PhD, and postdoctoral funding.
- Native **Spanish** speaker, fluent in **English** and **Portuguese**, competent in **French**.

POSITIONS

POSTDOCTORAL RESEARCHER | FAPESP – São Paulo, BR Oct25 - **Current**
Competitive call: position granted among over 20 applicants worldwide.
Project: *Dynamics and geometry in low dimensions*.

JUNIOR PROFESSOR | IMERL – Montevideo, UY Aug19 – **Current**
(on leave)
Competition-awarded permanent position since 2023.

POSTDOCTORAL RESEARCHER | PEDECIBA – Montevideo, UY Oct24 - Sep25
Ranked 1st in the selection process.
Project: *Rotation sets and actions on curves for higher genus surface homeomorphisms*.

JUNIOR PROFESSOR | CMAT – Montevideo, UY Aug23 – Sep24
Junior professorship awarded during the transition from my PhD to PostDoc status.

TEACHING ASSISTANT | CMAT – Montevideo, UY Aug16 – Mar18
Teaching duties during my bachelor's training (resigned to accept master's scholarship).

TEACHING ASSISTANT | IMERL – Montevideo, UY Mar15 – Jul19
Teaching duties during my bachelor's and Master's training.

MATH OLYMPIAD INSTRUCTOR | Los Pinos – Montevideo, UY Feb14 – Feb18
Training the best national students for the International Mathematical Olympiad.

MATH OLYMPIAD INSTRUCTOR | *OPM – Ciudad de Panamá, PA* Jan14 – Feb14
Training the National Panamanian Team for the International Mathematical Olympiad.

HEAD OF MATH OLYMPIAD TRAINING PROGRAM | *ELEF – Montevideo, UY* Mar13 – Dec17
Mentored an eventual Math Olympiad National Champion, and several national medalists.

EDUCATION

PHD IN APPLIED MATHEMATICS | *USP-UdelaR – São Paulo, BR* 2024

- Graduated with honors.
- Visiting PhD at Sorbonne Université, working with Pierre-Antoine Guihéneuf.
- Thesis: *Fully chaotic conservative models for some torus homeomorphisms*.
- Advisors: Alejandro Passeggi – Fábio Armando Tal.

MSC IN MATHEMATICS | *UdelaR – Montevideo, UY* 2020

- Graduated with honors, due to original results.
- Thesis: *Fixed points for branched covering maps of the plane*.
- Advisor: Juliana Xavier.

BACHELOR IN MATHEMATICS | *UdelaR – Montevideo, UY* 2017

- Monograph: *Homeomorfismos del plano: toda órbita periódica enlaza un punto fijo*.
- Advisor: Juliana Xavier.

PUBLICATIONS AND PREPRINTS

FULLY CHAOTIC CONSERVATIVE MODELS FOR SOME TORUS HOMEOMORPHISMS 2024

With Fábio Armando Tal | *arXiv:2404.02341*

Under consideration by **Memoirs of American Mathematical Society**

GEODESIC TRACKING AND THE SHAPE OF ERGODIC ROTATION SETS 2023

With Pablo Lessa and Pierre-Antoine Guihéneuf | *arXiv:2312.06249*

Under Consideration by **Annales Scientifiques de l'École Normale Supérieure**

FIXED POINTS FOR BRANCHED COVERING MAPS OF THE PLANE 2021

Published in **Fundamenta Mathematicae** 254 (2021), 1-14

PROFESSIONAL SERVICE

REFeree ACTIVITY

Referee for *Proceedings of the American Mathematical Society* | **PAMS**

SCIENTIFIC ORGANIZATION

Co-organizer of the *Seminar on Dynamical Systems and Geometry* | **USP** 2026 – Current

OTHER SERVICE

Co-organizer of the Mathematical Olympiad National Final | **ELEF, UdelaR** 2016, 2019

Deputy Leader and Jury Member, Uruguayan Mathematical Olympiad Delegation 2011 – 2016

SUPERVISION AND PROFESSIONAL TRAINING

LARA DE ASSUMPTÃO MAFFEI PIEROBON

2025 – 2026

Master student | *Topological horseshoes*

Co-supervision with Fábio Armando Tal. Defended in 2026.

TMU PROJECT

2017 – 2021

Including workshops for high-school teachers on math problem-solving.

INVITED TALKS

- *Chaotic models for hyperbolically acting homeos of higher genus surfaces* Sch. 2026
SURF. DYN. AND FINE CURVE GRAPHS WORKSHOP | **Sorbonne Université** – Paris, France
- *Where is the caos? Models for surface dynamics* Sch. 2026
II MEETING OF POSTDOCTORAL RESEARCHERS | **USP** – São Paulo, Brazil
- *Chaotic models for higher genus surface homeomorphisms* 2026
SEMINÁRIO DE SISTEMAS DINÂMICOS | **USP** – São Paulo, Brazil
- *Where is the caos? Models for surface dynamics* 2025
9º COLOQUIO URUGUAYO DE MATEMÁTICA | **UdelaR** – Montevideo, Uruguay
- *Fully chaotic models for higher genus surface homeomorphisms* 2025
8º ESCOLA BRASILEIRA DE SISTEMAS DINÂMICOS | **IMPA** – Rio de Janeiro, Brazil
- *Explicit uniform bounds for fixed elliptic islands* 2025
INTL. CONF. ON ADVANCED TOPICS IN DYNAMICAL SYSTEMS | **Nankai University** – Tianjin, China
- *Fully chaotic models for some torus homeomorphisms* 2024
SEMINÁRIO DE SISTEMAS DINÂMICOS | **IMPA** – Rio de Janeiro, Brazil
- *Fully chaotic conservative models for some torus homeomorphisms* 2024
SEMINARIO DE SISTEMAS DINÂMICOS | **UdelaR** – Montevideo, Uruguay
- *Uniform bounds in strictly toral dynamics* 2023
SURFACES IN BANYULS | **Observatoire Océanologique de Banyuls-sur-mer** – France
- *A little bit of forcing in strictly toral dynamics* 2023
SÉMINAIRE DE DYNAMIQUE SAUVAGE | **Sorbonne Université** – Paris, France
- *Applications of Haefliger's Theorem* 2022
SCHOOL: FOLIACIONES Y FLUJOS DE ANOSOV EN DIMENSIÓN 3 | **UdelaR** – Montevideo, Uruguay
- *Topologically chaotic surface homeomorphisms* 2021
ENCUENTRO DE ESTUDIANTES DE POSGRADO | **UdelaR** – Montevideo, Uruguay
- **Minicourse** - *Topics in plane topological dynamics* (with Juliana Xavier) 2019
7º COLOQUIO URUGUAYO DE MATEMÁTICA | **UdelaR** – Montevideo, Uruguay
- *Fixed point theorems for branched covering maps of surfaces* 2019
7º COLOQUIO URUGUAYO DE MATEMÁTICA | **UdelaR** – Montevideo, Uruguay
- *Growth rate of periodic orbits for branched covering maps* 2019
SEMINARIO DE SISTEMAS DINÂMICOS | **Universidad de Santiago de Chile** – Chile
- *Combinatorial invariants* 2017
6º COLOQUIO URUGUAYO DE MATEMÁTICA | **UdelaR** – Montevideo, Uruguay
- *Linking fixed points in plane homeomorphisms* 2017
SEMINARIO DE SISTEMAS DINÂMICOS | **UdelaR** – Montevideo, Uruguay

TEACHING

GRADUATE COURSES

- *Chaotic Models and Rotation Theory for Surface Homeomorphisms* Sched. 2026
SHORT COURSE – LECTURER. | **USP**
- *Endomorphism dynamics* 2025
SEMINAR. ASSISTING JULIANA XAVIER | **IMERL**
- *Applications of Linear Algebra* 2024
COORDINATION + PROBLEM CLASS INSTRUCTOR | **IMERL**
- *Topics in Topological Plane Dynamics* 2019
CONFERENCE MINICOURSE. CO-LECTURER | **IMERL**

UNDERGRADUATE COURSES

Course Coordination

- *Discrete Mathematics* | **CMAT** 2024
- *Complex Analysis* | **CMAT** 2024
- *Probability and Statistics* | **IMERL** 2023
- *Multivariable Calculus* | **IMERL** 2021
- *Introduction to Topology* | **CMAT** 2017
- *Geometry of Curves and Surfaces* | **CMAT** 2017

Lecturer

- *Vector Calculus* | **IMERL** 2025
- *Geometry and Linear Algebra* | **IMERL** 2024
- *Multivariable Calculus* | **IMERL** 2021, 2022

Problem Class Instructor

- *Geometry and Linear Algebra* | **IMERL** 2015, 2025
- *Complex Analysis* | **IMERL, CMAT** 2018, 2024
- *Discrete Mathematics* | **IMERL, CMAT** 2015, 2017, 2018, 2024
- *Differential Equations* | **IMERL** 2019, 2020, 2021, 2024
- *Probability and Statistics* | **IMERL** 2023
- *Vector Calculus* | **IMERL** 2020
- *Introduction to topology* | **CMAT** 2017
- *Mathematics for Biologists* | **CMAT** 2016
- *Single-variable Calculus* | **IMERL** 2016, 2017, 2019
- *Multivariable Calculus* | **IMERL** 2016

INSTITUTIONAL EVALUATIONS

Consistently strong student evaluations, averaging above **4.72/5 over 165+ evaluations** across multiple courses in the last five years – Verifiable at **IMERL - UdelaR**.

EDUCATIONAL RESOURCES

REVISTA TMU [↗](#)

2020

Compilation of notes prepared specifically for TMU workshops

TÓPICOS EN DINÁMICA TOPOLÓGICA PLANA [↗](#)

2019

Conference minicourse notes | 7º Coloquio Uruguayo de Matemática
With Juliana Xavier.

SEMINARIOS DE PROBLEMAS [↗](#)

2017 – 2021

Over 30 notes, each containing a brief theoretical overview and a curated set of problems.

OUTREACH

OUTREACH PROJECT

2017 – 2021

Coordination, organization and teaching in *Talleres Matemática Udelar TMU*. [↗](#)

- Problem-solving workshops for IMO preparation (students and teachers).
- Organization of plenary talks and annual science recreational days, receiving in total, thousands of students and teachers from across the country.

SCIENCE POPULARIZATION

- **Science-communication columns** in *Núcleo Delirante #3, #6 - Desembarco TV*. [↗](#) . 2025
- **Interview #12** of the series *Mis profes en Fing*. [↗](#) 2024
- **Contribution to exhibitions:** *Ingeniería de Muestra* [↗](#) 2022, 2024
Día internacional de la Matemática – Fing [↗](#) 2024
Imaginary – Un viaje por la matemática [↗](#) , 2015
- **Outreach seminar:** Inter-School Mathematical seminar - The British Schools. 2015

POPULAR-SCIENCE BOOK

A collection of short stories built around rich mathematical concepts. In preparation

FELLOWSHIPS AND RESEARCH INTERNSHIPS

I have been awarded more than 160K USD in graduate and postdoc fellowships, and more than 25K USD in previous scholarships.

FELLOWSHIPS

- **FAPESP** postdoc fellowship | 332K BRL ~ 61K USD Oct25 – Current
- **PEDECIBA** postdoc fellowship | 934K UYU ~ 23K USD Oct24 – Sep25
- **CAP** PhD fellowship | 2.38M UYU ~ 59K USD Apr20 – Mar24
- **CAP** Master's fellowship | 640K UYU ~ 19K USD Mar18 – Feb20
- **IMPA** Summer School scholarship | 2400BRL ~ 800 USD Jan17 – Feb17
- **ELEF** *Beca a la excelencia académica* scholarship | 504K UYU ~ 25K USD Mar10 – Dec12

RESEARCH INTERNSHIPS

- **IMPA** | with Alejandro Kocsard Aug24
- **IMJ-PRG, Sorbonne Université** | with Pierre-Antoine Guihéneuf Jun24
- **IMJ-PRG, Sorbonne Université** | with Pierre-Antoine Guihéneuf Sep23 – Dec23
- **IMJ-PRG, Sorbonne Université** | with Pierre-Antoine Guihéneuf Sep22 – Oct22
- **USP** | with Fábio Armando Tal Feb22 – Aug22
- **USACH** | with Andrés Navas Aug19

HONOURS AND AWARDS

- **2x Honourable Mentions:** International Mathematical Olympiad 2011, 2012
- **3x Bronze Medals:** Iberoamerican Mathematical Olympiad 2012
Iberoamerican Physics Olympiad 2012
Asian-Pacific Mathematical Olympiad 2012
- **2x Gold Medals:** National Mathematical Olympiad 2011, 2012

LANGUAGES

SPANISH | *Mother tongue*

ENGLISH | *Proficient*

PORTUGUESE | *Proficient*

FRENCH | *Competent*