

Curriculum Vitae

Frank Trujillo

January 2025

Personal information

Name: Frank Alfonso Trujillo Amézquita
Date of birth: 7 October 1993
Nationality: Colombian
Professional address: Centre de Recerca Matemàtica (CRM),
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Education

2016-2020 **Mathematics Ph.D.** at Université Paris Cité, Paris, France, under the supervision of Prof. Bassam Fayad and Prof. Hakan Eliasson
Thesis title: Exotic and tame behavior in quasi-periodic dynamics
Scholarship from: Fondation de sciences mathématiques de Paris (FSMP)

2013-2015 **Mathematics M.S.** at IMPA, Rio de Janeiro, Brazil
Scholarship from: Conselho nacional de desenvolvimento científico tecnológico (CNPQ) and Fundação de amparo à pesquisa do estado do Rio de Janeiro (FAPERJ)

2009-2012 **Mathematics B.S.** at Universidad Nacional de Colombia, Bogotá, Colombia

Current and previous positions

May 2024 - Apr 2026 **Marie Skłodowska-Curie postdoctoral fellow** at Centre de Recerca Matemàtica (CRM), Barcelona, Spain, under the mentorship of Prof. Marcel Guardia

Jan 2024 - Apr 2024 **María de Maeztu postdoctoral fellow** at Centre de Recerca Matemàtica (CRM), Barcelona, Spain, under the mentorship of Prof. Marcel Guardia

Sep 2020 - Dec 2023 **Postdoctoral researcher** at University of Zurich, Zurich, Switzerland, under the mentorship of Prof. Corinna Ulcigrai

Qualifications

2024-2028 **Maître de Conférences qualification**, French Habilitation for Associate Professor, Section 26

2021-2025 **Maître de Conférences qualification**, French Habilitation for Associate Professor, Section 25

Publications

Published

- [1] Hausdorff Dimension of Invariant Measures of Multicritical Circle Maps
Annales Henri Poincaré, 2020
<https://doi.org/10.1007/s00023-020-00940-2>
Frank Trujillo
- [2] Uniqueness properties of the KAM curve
Discrete and Continuous Dynamical Systems, 2021
<https://www.aims sciences.org/article/doi/10.3934/dcds.2021072>
Frank Trujillo
- [3] Smooth, mixing transformations with loosely Bernoulli Cartesian square
Ergodic Theory and Dynamical Systems, 2022
<https://www.cambridge.org/core/journals/ergodic-theory-and-dynamical-systems/article/abs/smooth-mixing-transformations-with-loosely-bernoulli-cartesian-square/8DC99BBD97B4C2AD5347CB80F5F6A076>
Frank Trujillo
- [4] Lyapunov instability in KAM stable Hamiltonians with two degrees of freedom
Journal of Modern Dynamics, 2023
<https://www.aims sciences.org/en/article/doi/10.3934/jmd.2023010>
Frank Trujillo
- [5] Rigidity for piecewise smooth circle homeomorphisms and certain GIETs
Advances in Mathematics, 2024
<https://www.sciencedirect.com/science/article/pii/S0001870824000756>
Przemysław Berk and Frank Trujillo
- [6] On the Hausdorff dimension of invariant measures of piecewise smooth circle homeomorphisms
Ergodic Theory and Dynamical Systems, 2024
<https://www.cambridge.org/core/journals/ergodic-theory-and-dynamical-systems/article/on-the-hausdorff-dimension-of-invariant-measures-of-piecewise-smooth-circle-homeomorphisms/AF3F4684ECCB505DF94FAC616F692A65>
Frank Trujillo

Accepted

- [7] Affine interval exchange maps with a singular conjugacy to an IET
To appear in *Annali Scuola Normale Superiore - Classe di Scienze*
<https://journals.sns.it/index.php/annaliscienze/article/view/6454>
Frank Trujillo and Corinna Ulcigrai
- [8] On the ergodicity of infinite antisymmetric extensions of symmetric IETs
To appear in *Journal of the European Mathematical Society*
<http://arxiv.org/abs/2304.01868>
Przemysław Berk and Frank Trujillo
- [9] Surviving Lower Dimensional Invariant Tori of a Resonant Torus with any Number of Resonances
To appear in *Transactions of the American Mathematical Society*
<http://arxiv.org/abs/2109.10064>
Frank Trujillo

Submitted

- [10] Ergodicity of skew-products over typical IETs
<http://arxiv.org/abs/2405.07645>
Fernando Argentero, Przemysław Berk, and Frank Trujillo
- [11] On the ergodicity of anti-symmetric skew products with singularities and its applications
<http://arxiv.org/abs/2412.21067>
Przemysław Berk, Krzysztof Frączek, and Frank Trujillo
- [12] Ergodic properties of infinite extension of symmetric interval exchange transformations
<http://arxiv.org/abs/2409.12168>
Przemysław Berk, Frank Trujillo, and Hao Wu
- [13] Ergodicity of explicit logarithmic cocycles over IETs
<http://arxiv.org/abs/2210.16343>
Przemysław Berk, Frank Trujillo, and Corinna Ulcigrai
- [14] On the uniqueness of affine IETs semi-conjugated to IETs
<http://arxiv.org/abs/2411.06419>
Frank Trujillo

Papers in Conferences

- [15] Surviving lower dimensional tori from an invariant resonant torus
Conference paper in *Dynamische Systeme, Oberwolfach Reports*, 2021
<https://ems.press/journals/owr/articles/8415336>
Frank Trujillo. *Editors:* Marie-Claude Arnaud et al.

Supervising and mentoring

01/09/2022-31/08/2023	Master thesis co-supervisor of Yuliana Nor at University of Zurich <i>Thesis title:</i> Indifferent Fixed Points of Holomorphic Maps and Regularity Properties of Brjuno Functions
01/09/2021-31/08/2022	Master thesis co-supervisor of Stefan Kurz at University of Zurich <i>Thesis title:</i> Dual Birkhoff Sums for Interval Exchange Transformations

Teaching experience

Fall semester 2024	Instructor , Student seminar on dynamical systems through examples, University of Zurich
Spring semester 2023	Instructor , Qualitative theory of differential equations, University of Zurich
Spring semester 2022	Instructor , Student seminar on Hamiltonian dynamics, University of Zurich
Fall semester 2021/22	Instructor , Foundations of mathematics, University of Zurich
Spring semester 2021	Teaching assistant , Complex analysis, University of Zurich
Fall semester 2020/21	Instructor , Student seminar on circle dynamics, University of Zurich
Spring semester 2020	Teaching assistant , Calculus I, Université Paris Descartes
Fall semester 2019/20	Teaching assistant , Measure theory, Université Paris Descartes
Spring semester 2019	Teaching assistant , Probability, Université Paris Descartes

Fall semester 2018/19	Teaching assistant , Advanced analysis and algebra, Université Paris Diderot
Spring semester 2017	Teaching assistant , Elementary analysis and algebra, Université Paris Diderot
Fall semester 2016/17	Teaching assistant , Advanced analysis and algebra, Université Paris Diderot

Institutional tasks

Sep 2021 - Dec 2023	Co-organizer for the Ergodic Theory and Dynamical Systems Seminar, ETHZ/University of Zurich, Switzerland
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Individual scientific expert activities

Scientific referee for various journals: Annales Scientifiques de l'École Normale Supérieure, Advances in Mathematics, Transactions of the American Mathematical Society, Journal of Differential Equations, Proceedings of the London Mathematical Society.

Conferences, talks and presentations

Mini-courses and lecture series

May-Jun 2023	An Introduction to KAM Theory, Workshop on Ergodic theory and parabolic dynamics, IMPAN, Poland, Link to recordings
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Invited conference talks

Jul 2025	(Upcoming) Brazilian Colloquium of mathematics, Rio de Janeiro, Brazil
Nov 2024	Workshop on Spectral Rigidity for Billiards, Budapest, Hungary
Aug 2024	School and Workshop on Dynamical Systems at ICTP, Trieste, Italy
Jun 2024	BMS-BGSMath Junior Meeting, Berlin, Germany
Jun 2024	IMJ-PRG Summer School 2024 - Stability and rigidity in dynamical systems, beyond classical KAM theory, Paris, France
Nov 2023	Barcelona Mathematical Days, Institut d'Estudis Catalans, Spain
Apr 2023	Workshop on two-dimensional maps, Institute Mittag-Leffler, Sweden
Dec 2022	Combinatorial and geometric approaches on dynamics, Universidad de Chile, Chile
Oct 2022	2nd Jangada dinâmica workshop on dynamical systems, ergodic theory and related areas, Universidade Federal do Ceará, Brazil
Nov 2021	Paraguayan colloquium on mathematics and related sciences, Universidad Nacional de Asunción, Paraguay
Sep 2021	8th SwissMAP general meeting, SwissMAP research station, Switzerland
Jul 2021	Oberwolfach workshop on dynamical systems, Mathematisches Forschungsinstitut Oberwolfach (MFO), Oberwolfach, Germany.
Nov 2020	Penn State workshop in dynamical systems and related topics, Pennsylvania State University, USA

Invited seminar talks

Oct 2024	Toruń ergodic theory and dynamical systems seminar, Uniwersytet Mikołaja Kopernika, Poland
Fev 2024	Seminar in dynamical systems at IST (DynamIST), IST, Austria
Jun 2023	Dynamics and Group Geometry Early Researchers Seminar (DAGGER), University of Warwick, Warwick, United Kingdom
May 2023	Quasiworld (online) seminar
Mar 2023	UB-UPC (Universitat de Barcelona - Universitat Politècnica de Catalunya) Dynamical Systems Seminar, Spain
Apr 2023	Ergodic theory and dynamical systems seminar, University of Zurich, Switzerland
Nov 2022	Geometry and dynamical systems seminar, Université de Neuchâtel, Switzerland
Jun 2022	Seminar in dynamical systems at IST (DynamIST), IST, Austria
Mar 2022	Inter-institutional seminar on dynamical systems, ergodic theory and related areas (dinâmica arretada), Universidades do Nordeste, Brazil
Apr 2021	Toruń ergodic theory and dynamical systems seminar, Uniwersytet Mikołaja Kopernika, Poland
Fev 2021	Geometry, analysis and dynamical systems seminar, Université Nice Sophia Antipolis, France
Jul 2020	Dynamics and probability seminar, Université de Picardie Jules Verne, France
Oct 2020	Ergodic theory and dynamical systems seminar, University of Zurich, Switzerland
May 2020	Dynamical systems seminar, Institut de Mathématiques de Jussieu, France
Dec 2019	Ergodic theory and dynamical systems seminar, Université Paris Sud, France

Invitation to international programs and Research visits

Jan 2025	University of Zurich, Switzerland (1 week) Host: Prof. Corinna Ulcigrai
Oct 2024	Uniwersytet Mikołaja Kopernika, Poland (3 weeks) Hosts: Prof. Przemysław Berk and Prof. Krzysztof Fraczek
Jun 2024	University of Zurich, Switzerland (1 week) Host: Prof. Corinna Ulcigrai
Fev 2024	Institute of Science and Technology Austria (ISTA) (1 week) Host: Prof. Vadim Kaloshin
Dec 2023	Uniwersytet Mikołaja Kopernika, Poland (2 weeks) Host: Prof. Przemysław Berk
Mar-Jun 2023	Simons Semester: Topological, smooth and holomorphic dynamics, ergodic theory, fractals, IMPAN and MIMUW Warsaw, Poland (1 month)
Jan-Apr 2023	Two Dimensional Maps, Institut Mittag-Leffler, Sweden (3 weeks)
Aug 2022	Uniwersytet Mikołaja Kopernika, Poland (1 month) Host: Prof. Przemysław Berk

Participation in Academic Events

Additionally, I have attended over 20 academic events (conferences, schools, workshops) without giving talks.

Public engagement and outreach

Jan-Jun 2023	Tutor in the Directed Reading Program <i>Pares Ordenados</i> (online and in Spanish) for mathematics undergraduate students in Latin America
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Apr 2022	Information and advice panel “Hanging on when your research is stuck,” Zurich Graduate School in Mathematics Forum, ETHZ, Switzerland
May 2021	Public lecture “Dynamical systems: Models and mathematics”, Universidad Manuela Beltrán, Colombia
Dec 2019	Mathematics popularization talk for high school, Collège Jean Jaurès, Saint Ouen, France, <u>Summary</u> (in French)

Prizes, awards, scholarships

2016	Scholarship for Ph.D studies in Mathematics, Foundation de sciences mathématiques de Paris, France
2014	Outstanding performance scholarship (Best first year Master’s student), Fundação de Amparo à Pesquisa do Estado do Rio de Janeiro, Brazil
2012	First place in “Efi-Ciencias” test (Test for last year students), Universidad Nacional de Colombia
2009 - Fall 2012	Outstanding performance scholarship (Top 10% each semester), Universidad Nacional de Colombia

Funding and Grants

Sep-Dec 2023	UZH Postdoc Grant, <i>Project Grant</i> , Principal Investigator, Hamiltonians and low-dimensional systems.
May 2024 - Apr 2026	Marie Skłodowska-Curie Action Postdoctoral Fellowship

Programming skills

C/C++, Python.

Language skills

Spanish (native), English (C1), French (C1), German (A2-B1), Portuguese (C1).