Santiago Toro Oquendo

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EDUCATION

University of Western Brittany, PhD in Mathematics — Brest, France · 2019 - 2024
- Thesis: Simplicial C_2- Isovariant Homotopy Theory ↗
- Advisor: Johannes Huisman ↗

Grenoble Alpes University, Master 2 Mathematics and Applications — Grenoble, France · 2018 - 2019
- Final project: Applications of motivic homotopy theory to arithmetic counts of lines ↗

National University of Colombia, Master in Mathematical Sciences — Medellin, Colombia · 2017 - 2018
Master not completed due to international mobility.

National University of Colombia, Bachelor's Degree in Mathematics — Medellin, Colombia · 2012 - 2015
- Final project (in spanish): The Riemann-Roch Theorem ↗

EXPERIENCE

University of Artois, Temporary Teaching and Research Assistant — Lens, France · 2025 - 2026
- Teaching mathematics in bachelor's degree (L1 to L3): linear algebra, foundations of mathematics.
- Research: ongoing research on homotopy theories for enriched categories over fc-multicategories.

University of Angers, Contract Lecturer — Angers, France · 2023 - 2024
- Teaching mathematics in bachelor's degree (L1 to L3): arithmetic on Z, analytical geometry, foundations of analysis, and mathematics for life and earth sciences.
- Preparation and correction of exams, tutoring and pedagogical monitoring of students and development of teaching materials.

University of Angers, Temporary Teaching and Research Assistant — Angers, France · 2022 - 2023
- Teaching mathematics in bachelor's degree (L1 to L3): linear algebra, arithmetic on Z, analytical geometry, and mathematics for life and earth sciences.
- Research: completion of my doctoral thesis and participation in a research project on cartesian 2-fibrations.

University of Western Brittany, Graduate Teaching Assistant — Brest, France · 2021 - 2022
- Teaching mathematics bachelor's degree courses for L1 - L3 students.
- Research: development of my doctoral thesis.

National University of Colombia, Graduate Instructor — Medellin, Colombia · 2016 - 2018
- Teaching mathematics lectures: linear algebra, differential calculus and integral calculus.
- Weekly tutoring supervision, exam invigilation and grading.

Latinhire/Tutor.com, Online Mathematics Tutor ↗ — Online - United States · Oct. 2015 – present
Provided private mathematics tutoring to students from the United States and Canada; adapted teaching methods to various learning styles; maintained a 4.9/5 rating on Tutor.com. Certifications: Student Preferred Tutor ↗, Years of service ↗.

PUBLICATIONS/PREPRINTS

Simplicial C_2- Isovariant Homotopy Theory — 2024
Santiago Toro Oquendo
Submitted to Journal Documenta Mathematica
doi.org/10.48550/arXiv.2312.08133 ↗

A model structure for cartesian 2-fibrations (In preparation) — 2025
C. Bardomiano, J. Nickel, M. Sarazola, D. Teixeira, S. Toro Oquendo, P. Verdugo

RESEARCH INTERESTS

(Higher) category theory and its interactions with other areas, (stable) Homotopy Theory, Isovariant Homotopy and its interactions with real algebraic geometry.

Conference Talks and Workshops

Mathematics in the Southern Cone 2   Montevideo, Uruguay
                                                                                     Feb. 2024

Journées de géométrie algébrique réelle du Centre Henri Lebesgue   Vannes, France
                                                                                    Nov. 2023

Birational Geometry and Regulous Functions   Croisic, France
Centre Henri Lebesgue   June 2023

Harnessing Motivic Invariants   Essen, Germany
Universität Duisburg-Essen   July 2022

Géométrie au bout du monde   Trez-Hir, France
Centre Henri Lebesgue   July 2022

Summer School: The Six-Functors Formalism and Motivic Homotopy Theory   Milan, Italy
Università degli Studi di Milano   Oct. 2021

Toposes Online   June 2021

Journées de géométrie algébrique réelle du Centre Henri Lebesgue   Île d'Ouessant, France
                                                                                    Oct. 2019

Autumn School: Computations in Motivic Homotopy Theory   Regensburg, Germany
Universität Regensburg   Sept. 2019

XXI Colombian Congress of Mathematics   Bogotá, Colombia
Universidad Nacional de Colombia, sede Bogotá   June 2017

V Latin-American Congress of Mathematicians (CLAM)   Barranquilla, Colombia
Universidad del Norte   July 2016

XX Colombian Congress of Mathematics   Manizales, Colombia
Universidad Nacional sede Manizales   June 2015

Seminars/colloquium Talks

A Model Structure for 2-Fibrations   Poitiers, France
Journées de Géométries Poitiers - Angers   Apr. 2024

C_2-Simplicial Isovariant Homotopy Theory   Nantes, France
Journées de géométrie algébrique réelle du Centre Henri Lebesgue   June 2023

Simplicial Isovariant Homotopy Theory   Angers, France
Séminaire systèmes dynamiques et géométrie, LAREMA Angers   2023

A^1-Connected Components   Lyon, France
Working group ANR HQDIAG2023 organized by Frédéric Déglise and Jean Fasel, ENS de Lyon 2022

The Real Cycle Map   Brest, France
Weekly working group organized by Pierre Martinez, LMBA Brest   2022-2023
  • Presentations: Sheaf cohomology and Witt rings

Higher Category Theory   Brest, France
Weekly working group organized by Johannes Huisman, Pierre Martinez, and myself, LMBA Brest 2021-2022
  • Presentations: Simplicial Categories, (Complete) Segal spaces and Quasicategories

Stable Homotopy Theory of the Real-Étale Site   Lyon, France
Working group ANR HQDIAG2022 organized by Frédéric Déglise, ENS de Lyon   2022

On the Homology Spectral Sequence of a Cosimplicial Space   Detroit, USA
Electronic Computational Homotopy Theory (eCHT) seminar, Wayne State University   2020

Awards and Scholarships

Bourse d'excellence de master   2018
Awarded by the LabEx PERSYVAL-Lab to pursue a Master 2 in Mathematics at the Grenoble Alpes University. ⧉

TECHNICAL SKILLS

Mathematics: Category theory, Homotopy theory, Isovariant homotopy and applications in real algebraic geometry. Technical writing, Teaching

Programming: Python, LaTeX, Matlab, Wolfram Mathematica, Haskell (Beginner), C (Beginner), Bash

Software & Tools: Data (NumPy, Pandas), Visualization (matplotlib, PGF/Tikz), Version Control (Git/GitHub), CI/CD (GitHub Actions), Docker

Languages: Spanish (Native), French (C2/Bilingual), English (C2/Bilingual)