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EMPLOYMENT

2023–2026 **Postdoctoral Fellow** in Department of Mathematics at University of Toronto (Canada).

Mentors: Yakov Shlapentokh-Rothman.

2022–2023 **Postdoctoral Fellow** in Laboratoire Jacques-Louis Lions at Sorbonne Université (France).

Mentor: Jacques Smulevici.

EDUCATION

2018–2023 **PhD in Mathematics** at University of Cambridge (UK).

Supervisors: Mihalis Dafermos and Clément Mouhot.

Thesis Title: Linear and non-linear collisionless many-particle systems.

2017–2018 **Master of Science in Mathematics** at Pontificia Universidad Católica de Chile.

2013–2016 **Bachelor in Mathematics** at Pontificia Universidad Católica de Chile.

RESEARCH INTERESTS

Analysis of PDEs. General Relativity. Kinetic Theory.

SCIENTIFIC WORK

Asymptotic stability of Schwarzschild spacetime for the spherically symmetric Einstein–massless Vlasov system; in preparation.

Decay for massless Vlasov fields on Schwarzschild spacetime, joint with L. Bigorgne; in preparation.

Decay properties for massive Vlasov fields on Schwarzschild spacetime; arXiv:2411.05124 preprint.

Late-time asymptotics of small data solutions for the Vlasov–Poisson system, joint with L. Bigorgne; arXiv:2404.05812 preprint.

A note on integrated local energy decay estimates for spherically symmetric black hole spacetimes, joint with G. Holzegel and G. Mavrogiannis; arXiv:2403.02533 preprint.

Decay properties of Vlasov fields on non-trapping asymptotically hyperbolic manifolds, joint with A. Velozo Ruiz; arXiv:2312.13496 preprint.

Modified scattering of small data solutions for the Vlasov–Poisson system with a repulsive potential, joint with L. Bigorgne and A. Velozo Ruiz; arXiv:2310.17424 to appear in SIAM Journal on Mathematical Analysis.

Small data solutions for the Vlasov–Poisson system with a repulsive potential, joint with A. Velozo Ruiz; Commun. Math. Phys. 405, 80 (2024).

Gevrey regularity for the Vlasov–Poisson system; Ann. Inst. H. Poincaré Anal. Non Linéaire 38 (2021), no. 4, 1145–1165.

Characterization of uniform hyperbolicity for fibre-bunched cocycles; Dyn. Syst. 35 (2020), no. 1, 124–139.

ACADEMIC VISITS

July 2024, Department of Mathematics, Imperial College London, invited by Martin Taylor.

March 2022, Department of Mathematics, Princeton University, invited by Mihalis Dafermos.

January 2022, Department of Mathematics, Pontificia Universidad Católica de Chile, invited by Mariel Sáez.

INVITED TALKS

November 2024, Workshop in Dynamical Systems and Related Topics, Penn State University.

August 2024, Analysis of Applied PDEs Graduate Student Seminar, University of Toronto.

July 2024, London PDE Seminar, UK.

June 2024, Analysis and Geometry Seminar, Pontificia Universidad Católica de Chile.

June 2024, PDE Seminar, Mathematical Engineering Department, Universidad de Chile.

March 2024, Analysis Seminar, Columbia University.

March 2024, Mathematical Physics Seminar, Johns Hopkins University.

November 2023, Princeton Gravity Initiative Seminar Series, Princeton University.

November 2023, Analysis of Applied PDEs Graduate Student Seminar, University of Toronto.

September 2023, Analysis and Applied Math Seminar, University of Toronto.

Jully 2023, Seminari di Metodi Analitici e Probabilistici, Università di Pisa.

June 2023, MathInGP Postdoctoral Research Symposium, Sorbonne Université.

April 2023, PDE Seminar, Mathematical Engineering Department, Universidad de Chile.

April 2023, Dynamical Systems Seminar of Santiago, Chile.

March 2023, MAFRAN days, University of Cambridge.

December 2022, Mathematical General Relativity Seminar, Sorbonne Université.

December 2022, International Conference on Geometric Analysis and Hyperbolic Equations, Guangxi Center for Mathematical Research, Guangxi University.

November 2022, Workshop 'Vlasov Equations: Geometric and Semi-classical Aspects', Institut de Recherche Mathématique de Rennes.

June 2022, London PDE Seminar, UK.

May 2022, Topics in General Relativity, University of Münster.

April 2022, Oxbridge PDE Conference, Oxford.

April 2022, Early Career Math Colloquium, University of Arizona.

February 2022, PDE Seminar, Brown University.

January 2022, Analysis and Geometry Seminar, Pontificia Universidad Católica de Chile.

December 2021, Partial Differential Equations Session, Annual Meeting of the Chilean Mathematical Society, Universidad de O'Higgins.

December 2021, MAFRAN days, Université Paris-Dauphine.

December 2021, Mathematical General Relativity Seminar, Sorbonne Université.

July 2021, Online Mathematical GR and Hyperbolic PDE Seminar.

June 2021, Junior Analysis Seminar, Imperial College London.

May 2021, CMI Student Seminar Series, University of Cambridge.

January 2021, Kinetic Theory Seminar, University of Cambridge.

December 2020, CDT Student Conference, Cambridge.

November 2020, PDE Seminar, Mathematical Engineering Department, Universidad de Chile.

September 2019, Analysis and Geometry Seminar, Pontificia Universidad Católica de Chile.

September 2019, Graduate Student Seminar, Pontificia Universidad Católica de Chile.

July 2018, Dynamical Systems Seminar, Pontificia Universidad Católica de Chile.

July 2018, Dynamical Systems Seminar, Pontificia Universidad Católica de Valparaíso.

TEACHING

Instructor, MAT137 Calculus with Proofs, University of Toronto, Fall 2024, Winter 2025.

Instructor, MAT136 Calculus II, University of Toronto, Winter 2024 .

Instructor, MAT244 ODEs, University of Toronto, Fall 2023.

Example Classes, Part III Analysis & PDEs, University of Cambridge, Michaelmas 2021.

Supervisions, Part II Differential Geometry, University of Cambridge, Lent 2020, Lent 2022.

Supervisions, Part IB Electromagnetism, University of Cambridge, Lent 2021.

Supervisions, Part II Linear Analysis, University of Cambridge, Michaelmas 2020.

Supervisions, Part II Integrable Systems, University of Cambridge, Michaelmas 2020.

Teaching Assistant, Topology, Pontificia Universidad Católica de Chile, Spring 2017.

Teaching Assistant, ODEs, Pontificia Universidad Católica de Chile, Winter 2017.

Teaching Assistant, Field Theory & Galois Theory, Pontificia Universidad Católica de Chile, Spring 2016, Spring 2017.

Teaching Assistant, Single Variable Calculus, Pontificia Universidad Católica de Chile, Spring 2014, Spring 2015.

Teaching Assistant, Multivariable Calculus, Pontificia Universidad Católica de Chile, Fall 2015.

ACADEMIC HONORS

Scholarship for PhD (2018–2022), CONICYT-Chile Cambridge Scholarship, Cambridge Trust.

Scholarship for PhD (2018–2022), National Commission for Scientific and Technological Research, Chile.

Smith-Knight & Rayleigh-Knight Prize (2020), Faculty of Mathematics, University of Cambridge.

Scholarship for MS (2018), National Commission for Scientific and Technological Research, Chile.

Scholarship for MS (2017), Department of Mathematics, Pontificia Universidad Católica de Chile.

Scholarship Rolando Chuaqui (2013–2016), Department of Mathematics, Pontificia Universidad Católica de Chile.

SERVICE

Referee for: Acta Mathematica Vietnamica, Annales Henri Poincaré, Archive for Rational Mechanics and Analysis, Communications in Mathematical Physics, Communications in Partial Differential Equations, SIAM Journal on Mathematical Analysis.

Co-organizer of the Paris Reading Group in General Relativity, Sorbonne Université (2022–2023).

Co-organizer of the MAFRAN Winter School: Particle Systems, PDEs and Inequalities, University of Cambridge (December 2020).

Co-organizer of joint Cambridge Analysts' Knowledge Exchange – OxPDE Student Seminar, University of Cambridge and University of Oxford (Easter 2020).

Co-organizer of the Cambridge Analysts' Knowledge Exchange seminar, University of Cambridge (Lent 2020).

Organizer of the Differential Geometry Graduate Student Seminar, Pontificia Universidad Católica de Chile (2017–2018).

OUTREACH

2017–2018 Instructor, Introduction to Mathematical Reasoning (TRM), Pontificia Universidad Católica de Chile. Special program for high school students.

2016–2017 Instructor, Chilean Team for International Math Olympiads (IMO and Iberoamerican).

OTHER INFORMATION

Languages: Spanish (native), English (fluent).

Citizenship: Chilean.