RENATO VELOZO RUIZ

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EMPLOYMENT

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

- Mentors: Stefanos Aretakis and 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.

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

Stability of Schwarzschild for the spherically symmetric Einstein–massless Vlasov system; in preparation.

Decay properties of massive Vlasov fields on Schwarzschild spacetime; in preparation.

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 trapping potential, joint with L. Bigorgne and A. Velozo Ruiz; arXiv:2310.17424, preprint.

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.

Rate distorsion theory, metric mean dimension and measure theoretic entropy, joint with A. Velozo Ruiz; arXiv:1707.05762, preprint.

ACADEMIC VISITS

Nov 2019 Department of Mathematics at Princeton University, invited by Mihalis Dafermos.

Ag 2019 Department of Mathematics at Pontificia Universidad Católica de Chile, invited by Duvan Henao.

ACADEMIC HONORS

2018–2022 Scholarship for PhD in Mathematics, CONICYT-Chile Cambridge Scholarship, Cambridge Trust, University of Cambridge.

2018–2022 Scholarship for PhD in Mathematics, National Commission for Scientific and Technological Research, Chile.

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

2018 Scholarship for Master of Science, National Commission for Scientific and Technological Research, Chile.

2017 Scholarship for Master of Science, Department of Mathematics, Pontificia Universidad Católica de Chile.

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

TEACHING

At University of Toronto:

Year 2024 Instructor for MAT137 Calculus with Proofs.

Win 2023 Instructor for MAT136 Calculus II.

Fall 2023 Instructor for MAT244 ODEs.

At University of Cambridge:

Lent 2022 Supervisions for Part II Differential Geometry.

Mich 2021 Example Classes for Part III Analysis & PDEs.

Lent 2021 Supervisions for Part IB Electromagnetism.

Mich 2020 Supervisions for Part II Linear Analysis.

Mich 2020 Supervisions for Part II Integrable Systems.

Lent 2020 Supervisions for Part II Differential Geometry.

At Pontificia Universidad Católica de Chile:

Sprin 2017 Teaching Assistant for Topology.

Wint 2017 Teaching Assistant for ODEs.

Spring 2016 Teaching Assistant for Field Theory & Galois Theory.

Spring 2015 Teaching Assistant for Single Variable Calculus.

Fall 2015 Teaching Assistant for Multivariable Calculus.

Sprin 2014 Teaching Assistant for Single Variable Calculus.

INVITED TALKS

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

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

Mar 2024   Analysis Seminar, Columbia University.

Mar 2024   Mathematical Physics Seminar, Johns Hopkins University.

Nov 2023   Princeton Gravity Initiative Seminar Series, Princeton University.

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

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

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

Jun 2023   MathInGP Postdoctoral Research Symposium, Sorbonne Université.

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

Apr 2023   Dynamical Systems Seminar of Santiago, Chile.

Mar 2023   MAFRAN days, University of Cambridge.

Dec 2022   Mathematical General Relativity Seminar, Sorbonne Université.

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

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

Jun 2022   London PDE Seminar, UK.

May 2022   Topics in General Relativity, University of Münster.

Apr 2022   Oxbridge PDE Conference, Oxford.

Apr 2022   Early Career Math Colloquium, University of Arizona.

Feb 2022   PDE Seminar, Brown University.

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

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

Dec 2021   MAFRAN days, Université Paris-Dauphine.

Dec 2021   Mathematical General Relativity Seminar, Sorbonne Université.

Jul 2021   Online Mathematical GR and Hyperbolic PDE Seminar.

Jun 2021   Junior Analysis Seminar, Imperial College London.

May 2021   CMI Student Seminar Series, University of Cambridge.

Jan 2021   Kinetic Theory Seminar, University of Cambridge.

Dec 2020   CDT Student Conference, Cambridge.

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

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

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

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

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

OUTREACH

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

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

SERVICE

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

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

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

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

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

OTHER INFORMATION

Citizenship: Chilean.

Languages: Spanish (native), English.