Jaume de Dios Pont

Curriculum Vitae

60 5th Avenue
New York, NY 10011
✉ jdedios@nyu.edu

Employment

2025 –	**NYU Center for Data Science**, *CDS Faculty Fellow.*.
2023 – 2025	**ETH Zurich**, *Postdoctoral Researcher.*, Mentor: Svitlana Mayboroda. Simons Collaboration on Localization of Waves..
May 2023 – Sep 2023	**Microsoft Research**, *Research Intern.*, Physics of AGI group. Mentors: Jerry Li; Adil Salim..
2020 – 2022	**UCLA**, *Teaching Assistant.*.

Education

2023	**PhD Mathematics**, *UCLA*, . Advisor: Terence Tao
2018	**MSc Mathematics**, *ETH Zurich*, . Thesis: Quantum Loewner Evolution (E. Powell and W. Werner)
2017	**BSc Mathematics**, *Universitat Autonoma de Barcelona*, (#1 Rank). Thesis: Oscillatory integrals and the Kakeya Conjecture (J. Garnett; J. Verdera)
2017	**BSc Physics**, *Universitat Autonoma de Barcelona*, (#1 Rank). Thesis: KCM-related experiments (F.X. Alvarez; A. Lopeandia)

Postgraduate Awards and Scholarships

2022-2023	**Dissertation Year Fellowship**, *UCLA*. Tuition and stipend for final year
2018-2020	**La Caixa Postgraduate Fellowship**, *Fundacion La Caixa*. Full tuition and stipend. Highest score.
2017-2018	**Excellence Scholarship**, *ETH Zurich*. Tuition; living costs; mentorship

Papers and Preprints

[0] **Sharp bounds on the failure of the hot spots conjecture**, *de Dios Pont, J.; Alexander W. Hsu; Mitchell A. Taylor*, Preprint (2025), arXiv:2508.16321.

[1] **Convex sets can have interior hot spots**, *de Dios Pont, J.*, Preprint (2024), arXiv:2412.06344.

[2] **Predicting quantum channels over general product distributions**, *Sitan Chen; de Dios Pont, J.; Jun-Ting Hsieh; Hsin-Yuan Huang; Jane Lange; Jerry Li*, Preprint (2024), arXiv:2409.03684.

[3] **Periodicity and decidability of translational tilings by rational polygonal sets**, *de Dios Pont, J.; Jan Grebik; Rachel Greenfeld; Jose Madrid*, Expositiones Mathematicae, arXiv:2408.02151.

[4] **A new proof of the convex hull of space curves with totally positive torsion**, *de Dios Pont, J.; Paata Ivanisvili; Jose Madrid*, Michigan Mathematical Journal, arXiv:2201.12932.

[5] **Query lower bounds for log-concave sampling**, *Sinho Chewi; de Dios Pont, J.; Jerry Li; Chen Lu; Shyam Narayanan*, JACM Vol.71 Issue 4 / FOCS 2023, arXiv:2304.02599.

[6] **Uniform Fourier Restriction Estimate for Simple Curves of Bounded Frequency**, *de Dios Pont, J.; Helge Jorgen Samuelsen*, Preprint (2023), arXiv:2303.11693.

[7] **Additive energies on discrete cubes**, *de Dios Pont, J.; Rachel Greenfeld; Paata Ivanisvili; Jose Madrid*, Discrete Analysis, arXiv:2112.09352.

[8] **Decoupling for fractal subsets of the parabola**, *Alan Chang; de Dios Pont, J.; Rachel Greenfeld; Asgar Jamneshan; Zane Kun Li; Jose Madrid*, Mathematische Zeitschrift, arXiv:2012.11458.

[9] **Role Detection in Bicycle-Sharing Networks Using Multilayer Stochastic Block Models**, *Jane Carlen; de Dios Pont, J.; Cassidy Mentus; Shyr-Shea Chang; Stephanie Wang; Mason A. Porter*, Network Science, arXiv:1908.09440.

[10] **On classical inequalities for autocorrelations and autoconvolutions**, *de Dios Pont, J.; Jose Madrid*, Preprint (2021), arXiv:2106.13873.

[11] **On Sparsity in Overparametrised Shallow ReLU Networks**, *Joan Bruna; de Dios Pont, J.*, Preprint (2020), arXiv:2006.10225.

[12] **A geometric lemma for complex polynomial curves in Fourier restriction theory**, *de Dios Pont, J.*, Preprint (2020), arXiv:2003.14140.

Talks

Research talks

Some Extreme Regimes of the Laplace Operator

2026 Simons Collaboration on Localization of Waves Annual Meeting (19 Feb '26),NYU CDS MaD Seminar (11 Feb '26),Joint Mathematics Meetings 2026 (Washington, D.C.) (5 Jan '26),Instituto de Ciencias Matemáticas (ICMAT) Seminar (1 Sep '25),ISM Discovery School — Interactions between Convex Geometry and Spectral Analysis (Montreal) (31 Jul '25),UK Spectral Theory Network Workshop (University of Reading) (1 Aug '25),Workshop on Spectral Geometry, PDEs and Mathematical Physics (FernUni Hagen) (1 Jul '25),Fourier Analysis and Beyond I (IMPA, Rio de Janeiro) (22 Jul '25),ETHZ Analysis Seminar (hosted by Yuansi Chen) (1 May '25),LSEC Seminar (1 Apr '25),University of Edinburgh Analysis Seminar (1 Mar '25),Lehigh University Mathematics Seminar (17 Mar '25),Institut Camille Jordan Analysis Seminar (Lyon) (10 Mar '25),Spectral Geometry in the Clouds (17 Mar '25),MPS Workshop on Computation in Mathematics (Flatiron Institute) (18 Feb '25),Simons Collaboration on Localization of Waves Annual Meeting — Poster Session (Flatiron Institute) (20 Feb '25),Virginia Tech Analysis Seminar (25 Feb '25),Seminari d'Anàlisi UB-UAB (16 Jan '25),ETHZ Analysis Seminar (1 Oct '24),Hausdorff Center for Mathematics Colloquium (Bonn) (1 Oct '24),2024 Simons Collaboration on Localization of Waves Meeting (1 Oct '24),

Sampling the hardest simple random variables

CRM — Mathematical Foundations of Machine Learning (Barcelona) (8 Jan '26),Hausdorff Research Institute for Mathematics — Boolean Analysis in Computer Science (HIM, Bonn) (1 Oct '24),BIRS-IMAG Workshop (Granada) (11 Jun '24),UCLA Analysis Seminar (9 May '24),Hausdorff Research Institute for Mathematics — Synergies between Probability, Geometric Analysis and Stochastic Geometry (HIM, Bonn) (1 Jan '24),Hausdorff Research Institute for Mathematics — Synergies between Probability, Geometric Analysis and Stochastic Geometry (HIM, Bonn) (1 Jan '24),University of Rochester Computer Science Seminar (24 May '23),NYU Courant Analysis Seminar (1 Mar '23),Microsoft Research Theory Seminar (7 Dec '22),NYU MaD Group Meeting (12 Dec '22),

Uniformity for polynomial curves

NTNU Analysis Seminar (Trondheim) (24 Oct '23),Rutgers University Analysis Seminar (1 Oct '23),University of Rochester Combinatorics Seminar (23 May '23),University of Minnesota PDE Seminar (15 Sep '22),Bilbao Analysis and PDE Seminar (BCAM) (9 Mar '22),UAB Analysis Seminar (Universitat Autònoma de Barcelona) (7 Mar '22),University of Bristol's Analysis and Geometry Seminar (17 Feb '22),UK Virtual Harmonic Analysis Seminar (Fourier 2.0) (20 Oct

'21),
Power-type cancellation for the simplex Hilbert transform

Kopp Summer School Reading Group (Bonn) (28 Sep '23),
Decoupling for Cantor sets

Harmonic Analysis and Fractal Sets Conference (HAFS, Columbus OH) (1 Mar '23),Fourier Restriction Online 2021 (12 Mar '21),
Uniform boundedness for certain operators parametrized by polynomial curves

UW Madison Analysis Seminar (29 Nov '22),Harmonic Analysis on Manifolds Summer School (UW Madison) (3 Aug '22),ETHZ Analysis Seminar (15 Mar '22),Probability and Analysis Webinar (PAW) (16 Aug '21),UC Davis Student-Run Analysis and PDE Seminar (11 Feb '21),Seminari d'Anàlisi UB-UAB (9 Nov '20),Online Analysis Research Seminar (OARS) (7 Dec '20),
A Function Space Perspective for Regularised and Overparametrised Shallow ReLU Networks

NYU, MaD Group Meeting (19 Oct '20),

Expository talks
Generació de variables aleatòries

Valentia Matemàtica (16 Jun '25),
Decoupling: From partial differential equations to number theory

Microsoft Research Theory Seminar (21 Jul '23),Kopp Summer School Reading Group (Bonn) (6 Oct '22),AIM Workshop: Analysis on the Hypercube with Applications to Quantum Computing (6 Jun '22),Brascamp-Lieb Summer School Reading Group (Kopp, Germany) (30 Sep '21),UCLA Participating Analysis Seminar (Reading Group) (16 Nov '21),SIMBa Seminar (UB / BGSMATH) (21 Oct '20),

Talks are grouped by topic, even when the covered material changed between instances.

▬▬▬ Research Visits (> 1 week)

26 Aug '25 – 29 Aug '25   **University of Reading**, *UK Spectral Theory Network Workshop*.

28 Jul '25 – 30 Jul '25   **FernUni Hagen**, *Workshop on spectral geometry, PDEs and mathematical physics*.

14 Jul '25 – 25 Jul '25   **New York**, *Flatiron Institute*.

30 Jun '25 – 4 Jul '25   **IMPA**, *Fourier Analysis and Beyond I*.

23 Jun '25 – 27 Jun '25   **Sorbonne Universite**, *Summer school in PDE and Probability*.

16 Jun '25 – 19 Jun '25   **Valencia**, *Valentia Matematica*.

2 Jun '25 – 6 Jun '25   **CRM Barcelona**, *Modern trends in Fourier Analysis*.

10 Mar '25 – 12 Mar '25   **Lyon**, *Camille Jordan Institute in Lyon (Analysis Seminar)*.

1 Mar '25 – 4 Mar '25   **University of Edinburgh**, *University of Edinburgh (Analysis Seminar)*.

23 Feb '25 – 27 Feb '25   **Virginia Tech**, *Virginia Tech (Analysis Seminar)*.

20 Feb '25 – 21 Feb '25   **Flatiron Institute, NY**, *Simon's collaboration on wave localization: Annual Meeting.*.

18 Feb '25 – **Flatiron Institute, NY**, *MPS Workshop on Computation in Mathematics*.
18 Feb '25

13 Jan '25 – **Universitat Autonoma de Barcelona**, *Seminari d'Analisi UAB-UB*.
17 Jan '25

11 Oct '24 – **Hausdorff Insitute of Mathematics, Bonn**, *Boolean Analysis in Computer Science*.
25 Oct '24

6 Oct '24 – **MFO Oberwolfach**, *Quantum Signal Processing*.
11 Oct '24

6 Oct '24 – **MFO Oberwolfach**, *Arbeitsgemeinschaft: Quantum Signal Processing and Nonlinear Fourier*
11 Oct '24 *Analysis*.

8 Jul '24 – **Hausdorff Center for Mathematics, Bonn**, *Uniformity and Stability of Oscillatory Integrals*.
12 Jul '24

3 Jun '24 – **Barcelona**, *Barcelona Analysis Conference*.
3 Jun '24

8 Jan '24 – **HIM Bonn**, *Synergies trimester*.
31 Jan '24

8 Jan '24 – **Hausdorff Insitute of Mathematics, Bonn**, *Dual Trimester Program: Synergies between*
31 Jan '24 *modern probability, geometric analysis and stochastic geometry*.

20 Oct '23 – **Trondheim**, *NTNU visit*.
3 Nov '23

30 May '23 **Seattle, WA**, *Microsoft Research Internship*.
– 1 Sep '23

22 May '23 **Rochester, NY**, *University of Rochester*.
– 25 May
'23

17 Oct '22 – **Palo Alto, California**, *Stanford University*.
28 Oct '22

2 Oct '22 – **Kopp, Germany**, *Nodal domains and landscape functions*.
7 Oct '22

7 Sep '22 – **UMN, Minneapolis**, *University of Minneapolis*.
28 Sep '22

1 Aug '22 – **UW Madison, WI**, *Harmonic analysis on manifolds summer school*.
5 Aug '22

2 Jul '22 – **London**, *COLT*.
5 Jul '22

23 Jun '22 – **ICMS, Edinburgh**, *Fourier Analysis @200*.
1 Jul '22

23 Jun '22 – **CRM - Barcelona**, *Workshop on Analysis and PDEs*.
23 Jun '22

13 Jun '22 – **Princeton**, *Princeton Machine Learning Theory Summer School 2022*.
17 Jun '22

6 Jun '22 – **AIM, San Jose**, *Analysis on the hypercube with applications to quantum computing*.
10 Jun '22

21 May '22 **FSU, Tallahasee**, *CBMS Conference*.
– 28 May
'22

14 Mar '22 – 19 Mar '22	**Visiting Joao P. Ramos**, *ETH Zurich.*
8 Mar '22 – 14 Mar '22	**Visiting Mateus Costa da Sousa.**, *Basque Center for Applied Mathematics.*
23 Jan '22 – 5 Mar '22	**HIM Bonn**, *HIM trimester: GMT; Singular integrals; PDE.*
23 Jan '22 – 5 Mar '22	**Haudroff Mathematical Institute, Bonn, Germany**, *Interactions between Geometric measure theory, Singular integrals, and PDE.*
11 Oct '21 – 15 Oct '21	**Online**, *Summer School on discrete analysis and complexity of quantum algorithms.*
26 Sep '21 – 1 Oct '21	**Wolffhotel, Kopp, Germany**, *Brascamp-Lieb inequalities Summer School.*
1 Aug '21 – 20 Aug '21	**Haudroff Mathematical Institute, Bonn, Germany**, *Harmonic Analysis and Analytic Number Theory, Dual trimester program.*
3 May '21 – 26 Jun '21	**Haudroff Mathematical Institute, Bonn, Germany**, *Harmonic Analysis and Analytic Number Theory, Dual trimester program.*

Teaching Experience

ETH Zurich (Main Instructor)

○ **Formalizing Mathematics in Lean**   Spring 2025

ETH Zurich (Teaching Assistant)

○ **Differential Geometry**   Spring 2024

UCLA (Teaching Assistant)

○ **Math 131A (Real Analysis)**   Fall 2020; Spring 2022
○ **Math 134 (ODE I)**   Fall 2021
○ **Math 135 (ODE II / PDE)**   Fall 2021
○ **Math 33B (Linear Algebra II)**   Spring 2021
○ **Math 32A (Calculus I)**   Fall 2020; Winter 2021
○ **Math 32B (Calculus II)**   Winter 2021

Reviewing

Reviewer for: Transactions of the AMS, Proceedings of the AMS, Mathematical Statistics and Learning, Discrete Mathematics, Journal of the London Mathematical Society, AMS Contemporary Mathematics.

Misc. Coding Skills

○ Proficient in Python (incl. Jax, NumPy/SciPy/Matplotlib), LaTeX
○ Git/Version Control

Undergraduate Research Experience

2017	**GNAM**, *Grup de Nanomaterials, UAB.* Research on heat conduction beyond the Fourier equations at the nanoscale, with a focus on the KCM diffusion model.
2016	**ICFO**, *Summer Fellowship of the Institute of Photonic Sciences.* Research fellow in the group of Antonio Acín (Quantum Information). Proved impossibility results on the creation of superpositions of unknown quantum states. Supervisor: Dr. Michal Oszmaniec.

2015   **The Dark Energy Survey Project**, *IFAE – Institute for High Energy Physics*.
      Study of theoretical models regarding the harmonic spectrum of galaxy density distributions. Supervisor:
      Dr. Ramon Miquel.