

Jaume de Dios Pont

Curriculum Vitae

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Education

- Currently **PhD. Candidate in Mathematics**, *University of California, Los Angeles*.
- Sept. 2018 **MS. Mathematics**, *Eidgenössische Technische Hochschule Zürich*,
Master Thesis: Quantum Loewner Evolution, supervised by E. Powell and W. Werner
- Sept. 2017 **BS. Mathematics**, *Autonomous University of Barcelona*, Grade: 9.71/10, (#1 Rank).
- (2016 – 17) **UCEAP Exchange Program**, *University of California Los Angeles*,
Bachelor Thesis: Oscillatory integrals and the Kakeya Conjecture, supervised by J. Garnett, J. Verdera
- Sept. 2017 **BS. Physics**, *Autonomous University of Barcelona*, Grade: 9.62/10, (#1 Rank).
Bachelor Thesis: Design of KCM-related experiments, supervised by F. X. Álvarez, A. Lopeandía

Scholarships

- 2018–2020 **Beca ‘La Caixa’**, (\$60,000 + 6 quarters of nonresident tuition and health insurance).
Granted the ‘La Caixa’ scholarship to pursue graduate studies in the US starting August 2018. The scholarship covers full tuition and a stipend for the first two years of the graduate program. Obtained the highest score given by the selection committee.
- 2017 - 2018 **Excellence Scholarship**, *ETH Zurich* (CHF 24,000 + 2 semesters of tuition).
Granted the Excellence scholarship for the Master in Mathematics, which covers tuition, living costs, and a special mentorship program. (Paying up to three semesters but I graduated in two)

Publications and preprints

- [1] **The convex hull of space curves with totally positive torsion**, *de Dios Pont, J., Greenfeld, R., Ivanisvili, P., & Madrid, J.*, Preprint (2022), arXiv:2201.12932.
- [2] **Additive energies on discrete cubes**, *de Dios Pont, J., Greenfeld, R., Ivanisvili, P., & Madrid, J.*, Preprint (2021), arXiv:2112.09352.
- [3] **Decoupling for fractal subsets of the parabola**, *Chang, A., de Dios Pont, J., Greenfeld, R., Jamneshan, A., Li, Z. K., & Madrid, J.*, *Mathematische Zeitschrift*, 1-29. (2022).
- [4] **On classical inequalities for autocorrelations and autoconvolutions**, *de Dios Pont, J., & Madrid, J.*, Preprint (2021), arXiv:2106.13873.
- [5] **A geometric lemma for complex polynomial curves with applications in Fourier restriction theory**, *de Dios Pont, J.*, Preprint (2020), arXiv:2003.14140.
- [6] **On Sparsity in Overparametrised Shallow ReLU Networks**, *de Dios Pont, J. & Bruna, J.*, Preprint (2020), arXiv:2006.10225.
- [7] **Role Detection in Bicycle-Sharing Networks Using Multilayer Stochastic Block Models**, *Carlen, J., de Dios Pont, J., Mentus, C., Chang, S., Wang, S., & Porter, M.*, Accepted in *Network Science* (2022), arXiv:1908.09440.

Talks

- 9 Mar '22 **Bilbao Analysis and PDE**, *The convex hull of space curves with totally positive torsion*, (Seminar talk).
- 7 Mar '22 **UAB Analysis Seminar**, *The convex hull of space curves with totally positive torsion*, (Seminar talk).
- 17 Feb '22 **University of Bristol's Analysis and Geometry Seminar**, *Decoupling, Cantor sets, and additive combinatorics*, (Seminar talk).
- 3 Feb '22 **Workshop on Harmonic analysis, Singular Integrals and PDEs (HIM, Bonn)**, *Decoupling for Cantor sets on the parabola*, (Workshop talk).
- 20 Oct '21 **UK Virtual Harmonic Analysis Seminar**, *Decoupling, Cantor sets and additive combinatorics*, (Seminar talk).
- 16 Aug '21 **Probability and analysis webinar**, *Uniform boundedness in operators parametrized by polynomial curves*, (Seminar talk).
- 12 Mar '21 **Fourier restriction online 2021**, *Decoupling for Cantor Sets*, (Workshop talk).
- 11 Feb '21 **UC Davis Student-Run Analysis & PDE**, *Uniform boundedness in operators parametrized by polynomial curves*, (Seminar talk).
- 7 Dec '20 **Online Analysis Research Seminar**, *Uniform boundedness in operators parametrized by polynomial curves*, (Seminar talk).
- 9 Nov '20 **Seminari d'Anàlisi UB-UAB**, *Uniform boundedness in operators parametrized by polynomial curves*, (Seminar talk).
- 21 Oct '20 **SIMBa seminar (UB / BGSMATH)**, *Decoupling and applications: from PDEs to Number Theory*, (Seminar talk).
- 19 Oct '20 **NYU, MaD Group Meeting**, *On Sparsity in Overparametrised Shallow ReLU Networks*, (Seminar talk).

Research Visits

- March 2022 **ETHZ**, *Visiting Joao P. Ramos*, (March 14th - March 19th 2022).
- March 2022 **Basque Center for Applied Mathematics**, *Visiting Mateus Costa da Sousa*, (March 8th - March 14th 2022).
- Jan - March 2022 **Interactions between Geometric measure theory, Singular integrals, and PDE**, *Hausdorff Research Institute for Mathematics (Bonn)*, (January 23rd - March 5th).
- May-Aug 2021 **Harmonic Analysis and Analytic Number Theory Trimester Program**, *Hausdorff Research Institute for Mathematics (Bonn)*, (May 5th - June 26th and August 1st - August 20th).

Teaching

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|-------------------|----------------------|--------------------|----------|
| o Math 32A | Fall '20, Winter '21 | o Math 131A | Fall '20 |
| o Math 32B | Winter '21 | o Math 134 | Fall '21 |
| o Math 33B | Spring '21 | o Math 135 | Fall '21 |

Undergraduate research experience

- 2017 **GNAM**, *Grup de Nanomaterials, UAB*.
Research on the GNAM physics Group. Designed experiments to measure heat conduction beyond the scope of the Fourier equations at the Nanoscale, with a focus on the KCM diffusion model. At the moment the designed experiments are being performed in GNAM.

2016 **ICFO**, *Summer Fellowship of the Institute of Photonic Sciences*.

Research fellow in the group of Antonio Acín (Quantum Information). The main focus of my research was the creation of superpositions of unknown quantum states. I proved that such creation is impossible even under more general circumstances than it was previously known, and studied the situation where more than one copy is given. Supervisor: Dr. Michał Oszmaniec

2015 **The Dark Energy Survey Project**, *IFAE- Institute for High Energy Physics*.

Short time intern in the Dark Energy Survey Project. My main goal was to perform numerical computations in python, in order to study the soundness of theoretical models regarding the harmonic spectrum of galaxy density distributions. Supervisor: Dr. Ramon Miquel