CV Xavier Ros Oton

CONTACT INFORMATION

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POSITIONS

ICREA & Universitat de Barcelona 09/2020 - present
ICREA Research Professor & Catedràtic d'Universitat
Departament de Matemàtiques i Informàtica

Universität Zürich 09/2017 - 08/2020
Assistant Professor
Institut für Mathematik

University of Texas at Austin 08/2014 - 08/2017
R. H. Bing Instructor
Department of Mathematics

EDUCATION

Ph.D. in Mathematics 09/2011 - 06/2014
Universitat Politècnica de Catalunya
Adviser: Xavier Cabré

Master in Mathematics 09/2010 - 06/2011
Universitat Politècnica de Catalunya

Degree in Mathematics 09/2006 - 06/2010
Universitat Politècnica de Catalunya
Ranked 1st, finishing the 5 years degree in 4 years.

HONORS AND AWARDS

- PI of the **ERC Consolidator Grant** 'SSNSD' (2024 - 2029)
(Awarded amount: 1,682,500 €)
- **Premio Nacional de Investigación para Jóvenes** en Matemáticas y Tecnologías de la Información y las Comunicaciones 2023
(Awarded annually to a Spanish mathematician or computer scientist under 40 years. The prize, given by the Spanish Government, comes with a monetary award of 30,000 €.)
- **Frontiers of Science Awards** 2023 (for the papers [18] and [22] below)
(International prize awarded to 86 papers in all areas of Mathematics published in 2018–2022. Given by the government of China at the International Congress of Basic Science.)
- Ferran Sunyer i Balaguer Prize 2023
(Awarded for the book "*Integro-Differential Elliptic Equations*", with X. Fernández-Real. The prize comes with a monetary award of 15,000 €.)
- 'Académico Correspondiente' of the Spanish **Royal Academy of Sciences**
(Elected on October 2022. Youngest member of the Academy.)
- **Stampacchia Gold Medal 2021**
(International prize awarded every three years to a mathematician whose age does not exceed 35 in recognition of outstanding contributions to the Calculus of Variations.)
- **Premio Investigación Científica 2019** from the Fundación Princesa de Girona

(Awarded annually to a young Spanish scientist under 35 years. The prize is given by the King of Spain, and comes with a monetary award of 20,000 €.)

- PI of the **ERC Starting Grant** 'EllipticPDE' (2019 - 2024)
  (Awarded amount: 1,335,250 €)
  Youngest awardee of ERC Starting Grant 2018 (among all panels in all sciences)
- PI of SNSF Research Project (04/2018 - 08/2020)
  (Awarded amount: 200,000 CHF)
- **Antonio Valle Prize 2017** from the Spanish Society of Applied Mathematics
  (Awarded anually to the best researcher under 34 years. At age 29, I became the youngest winner of the award ever.)
- **J. L. Rubio de Francia Prize 2017**, Royal Spanish Mathematical Society (RSME)
  (Awarded anually to a young mathematician from Spain or residing in Spain. It is the highest distinction given by the RSME, and one of the most important prizes in Mathematics in Spain.)
- PI of the NSF Analysis Grant DMS-1565186 (07/2016 - 08/2017)
  (Awarded amount: $103,617)
- Vicent Caselles Prize 2015 from the RSME and the BBVA Foundation
  (Spanish award to the best PhD theses in Mathematics)
- Extraordinary PhD Prize from the Universitat Politècnica de Catalunya
- Évariste Galois Prize 2012 from the Catalan Mathematical Society (SCM)
  (Best Master's Thesis award)
- Bronze Medal at the International Mathematical Olympiad (IMO), 2006

Books

[1] Integro-Differential Elliptic Equations,
X. Fernandez-Real, X. Ros-Oton,
Progress in Mathematics, Birkhäuser, 2024 (forthcoming).

[2] Regularity Theory for Elliptic PDEs,
X. Fernandez-Real, X. Ros-Oton,
Zürich Lectures in Advanced Mathematics. EMS books, 2022.

(* in Mathematics, authors are always listed in alphabetical order)

Articles and preprints

[3] Schauder and Cordes-Nirenberg estimates for nonlocal elliptic equations with singular kernels,
X. Fernandez-Real, X. Ros-Oton,
preprint arXiv (2023).

[4] Obstacle problems for nonlocal operators with singular kernels,
X. Ros-Oton, M. Weidner,
preprint arXiv (2023).

[5] Semiconvexity estimates for nonlinear integro-differential equations,
X. Ros-Oton, C. Torres-Latorre, M. Weidner,
preprint arXiv (2023).

[6] Regularity theory for nonlocal obstacle problems with critical and subcritical scaling,
A. Figalli, X. Ros-Oton, J. Serra,
preprint arXiv (2023).

[7] Optimal regularity and fine asymptotics for the porous medium equation in bounded domains,
T. Jin, X. Ros-Oton, J. Xiong,
preprint arXiv (2022).

[8] Optimal regularity for the fully nonlinear thin obstacle problem,
M. Colombo, X. Fernandez-Real, X. Ros-Oton,
J. Eur. Math. Soc. (2024), to appear.

[9] Optimal regularity for supercritical parabolic obstacle problems,
X. Ros-Oton, C. Torres-Latorre,
Comm. Pure Appl. Math. (2024), to appear.

[10] Global Schauder theory for minimizers of the $H^s(\Omega)$ energy,
M. M. Fall, X. Ros-Oton,
J. Funct. Anal. 283 (2022), 109523, 50pag.

[11] The singular set in the Stefan problem,
A. Figalli, X. Ros-Oton, J. Serra,
J. Amer. Math. Soc. (2024), to appear.

[12] Non-symmetric stable operators: regularity theory and integration by parts,
S. Dipierro, X. Ros-Oton, J. Serra, E. Valdinoci
Adv. Math. 401 (2022), 108321, 100pag.

[13] New boundary Harnack inequalities with right hand side,
X. Ros-Oton, C. Torres-Latorre
J. Differential Equations 288 (2021), 204-249.

[14] Stable cones in the thin one-phase problem,
X. Fernandez-Real, X. Ros-Oton
Amer. J. Math. (2024), to appear.

[15] Sharp quantitative stability for isoperimetric inequalities with homogeneous weights,
E. Cinti, F. Glaudo, A. Pratelli, X. Ros-Oton, J. Serra,
Trans. Amer. Math. Soc. 375 (2022), 1509-1550.

[16] Characterizing compact coincidence sets in the thin obstacle problem,
S. Eberle, X. Ros-Oton, G. Weiss,
Nonlinear Anal. 211 (2021), 112473.
Special issue on "Free boundary problems".

[17] The Neumann problem for the fractional Laplacian: regularity up to the boundary,
A. Audrito, J.-C. Felipe-Navarro, X. Ros-Oton,
Ann. Sc. Norm. Super. Pisa Cl. Sci. 24 (2023), 1155-1222.

[18] Generic regularity of free boundaries for the obstacle problem,
A. Figalli, X. Ros-Oton, J. Serra,
Publ. Math. Inst. Hautes Études Sci. 132 (2020), 181-292.

[19] Free boundary regularity for almost every solution to the Signorini problem,
X. Fernandez-Real, X. Ros-Oton,
Arch. Rat. Mech. Anal. 240 (2021), 419-466.

[20] The Dirichlet problem for nonlocal elliptic operators with $C^{0,\alpha}$ exterior data,
A. Audrito, X. Ros-Oton,
Proc. Amer. Math. Soc., 148 (2020), 4455-4470.

[21] Obstacle problems for integro-differential operators: higher regularity of free boundaries,
N. Abatangelo, X. Ros-Oton,
Adv. Math. 360 (2020), 106931, 61pp.

[22] Stable solutions to semilinear elliptic equations are smooth up to dimension 9,
X. Cabré, A. Figalli, X. Ros-Oton, J. Serra,
Acta Math. 224 (2020), 187-252.

[23] On global solutions to semilinear elliptic equations related to the one-phase free boundary problem,
X. Fernandez-Real, X. Ros-Oton,
Discrete Contin. Dyn. Syst. A 39 (2019), 6945-6959.
Special issue Dedicated to Luis Caffarelli on the Occasion of his 70th Birthday.

[24] Higher-order boundary regularity estimates for nonlocal parabolic equations,
X. Ros-Oton, H. Vivas
Calc. Var. Partial Differential Equations 57 (2018), 111.

[25] Structure and regularity of the singular set in the obstacle problem for the fractional Laplacian,
N. Garofalo, X. Ros-Oton,
Rev. Mat. Iberoam. 35 (2019), 1309-1365.

[26] The obstacle problem for the fractional Laplacian with critical drift,
X. Fernandez-Real, X. Ros-Oton,
Math. Ann. 371 (2018), 1683-1735.

[27] The boundary Harnack principle for nonlocal elliptic equations in non-divergence form,
X. Ros-Oton, J. Serra,
Potential Anal. 51 (2019), 315-331.

[28] Free boundary regularity in the parabolic fractional obstacle problem,
B. Barrios, A. Figalli, X. Ros-Oton,
Comm. Pure Appl. Math. 71 (2018), 2129-2159.

[29] On the regularity of the free boundary for the p-Laplacian obstacle problem,
A. Figalli, B. Krummel, X. Ros-Oton,
J. Differential Equations 263 (2017), 1931-1945.

[30] The structure of the free boundary in the fully nonlinear thin obstacle problem,
X. Ros-Oton, J. Serra,
Adv. Math. 316 (2017), 710-747.

[31] Obstacle problems for integro-differential operators: regularity of solutions and free boundaries,
L. Caffarelli, X. Ros-Oton, J. Serra,
Invent. Math. 208 (2017), 1155-1211.

[32] Boundary regularity estimates for nonlocal elliptic equations in C^1 and $C^{1,\alpha}$ domains,
X. Ros-Oton, J. Serra,
Ann. Mat. Pura Appl. 196 (2017), 1637-1668.

[33] Regularity theory for general stable operators: parabolic equations,
X. Fernandez-Real, X. Ros-Oton,
J. Funct. Anal. 272 (2017), 4165-4221.

[34] Infinite speed of propagation and regularity of solutions to the fractional porous medium equation in general domains,
M. Bonforte, A. Figalli, X. Ros-Oton,
Comm. Pure Appl. Math. 70 (2017), 1472-1508.

[35] Global regularity for the free boundary in the obstacle problem for the fractional Laplacian,
B. Barrios, A. Figalli, X. Ros-Oton,
Amer. J. Math. 140 (2018), 415-447.

[36] A one-dimensional symmetry result for a class of nonlocal semilinear equations in the plane,
F. Hamel, X. Ros-Oton, Y. Sire, E. Valdinoci,
Ann. Inst. H. Poincaré Anal. Non Linéaire 34 (2017), 469-482.

[37] Pohozaev identities for anisotropic integro-differential operators,
X. Ros-Oton, J. Serra, E. Valdinoci,
Comm. Partial Differential Equations 42 (2017), 1290-1321.

[38] The Dirichlet problem for nonlocal operators with singular kernels: convex and non-convex domains,
X. Ros-Oton, E. Valdinoci,
Adv. Math. 288 (2016), 732-790.

[39] Regularity theory for general stable operators,
X. Ros-Oton, J. Serra,
J. Differential Equations 260 (2016), 8675-8715.

[40] Boundary regularity for fully nonlinear integro-differential equations,
X. Ros-Oton, J. Serra,
Duke Math. J. 165 (2016), 2079-2154.

[41] Nonlocal problems with Neumann boundary conditions,
S. Dipierro, X. Ros-Oton, E. Valdinoci,
Rev. Mat. Iberoam. 33 (2017), 377-416.

[42] Boundary regularity for the fractional heat equation,
X. Fernández-Real, X. Ros-Oton,
Rev. Acad. Cienc. Ser. A Math. 101 (2016), 49-64.

[43] Local integration by parts and Pohozaev identities for higher order fractional Laplacians,
X. Ros-Oton, J. Serra,
Discrete Contin. Dyn. Syst. A 35 (2015), 2131-2150.

[44] Regularity for the fractional Gelfand problem up to dimension 7,
X. Ros-Oton,
J. Math. Anal. Appl. 419 (2014), 10-19.

[45] Nonexistence results for nonlocal equations with critical and supercritical nonlinearities,
X. Ros-Oton, J. Serra,
Comm. Partial Differential Equations 40 (2015), 115-133.

[46] The extremal solution for the fractional Laplacian,
X. Ros-Oton, J. Serra,
Calc. Var. Partial Differential Equations 50 (2014), 723-750.

[47] Sharp isoperimetric inequalities via the ABP method,
X. Cabré, X. Ros-Oton, J. Serra,
J. Eur. Math. Soc. 18 (2016), 2971-2998.

[48] The Pohozaev identity for the fractional Laplacian,
X. Ros-Oton, J. Serra,
Arch. Rat. Mech. Anal. 213 (2014), 587-628.

[49] The Dirichlet problem for the fractional Laplacian: regularity up to the boundary,
X. Ros-Oton, J. Serra,
J. Math. Pures Appl. 101 (2014), 275-302.

[50] Sobolev and isoperimetric inequalities with monomial weights,
X. Cabré, X. Ros-Oton,
J. Differential Equations 255 (2013), 4312-4336.

[51] Regularity of stable solutions up to dimension 7 in domains of double revolution,
X. Cabré, X. Ros-Oton,
Comm. Partial Differential Equations 38 (2013), 135-154.

[52] Existence of periodic solutions with nonconstant sign in a class of generalized Abel differential equations,
J. M. Olm, X. Ros-Oton,
Discrete Contin. Dyn. Syst. A 33 (2013), 1603-1614.

[53] On a factorization of Riemann's ζ function with respect to a quadratic field and its computation,
X. Ros-Oton,
Rev. Acad. Cienc. Ser. A Math. 106 (2012), 419-427.

[54] Periodic solutions with nonconstant sign in Abel equations of second kind,
J. M. Olm, X. Ros-Oton, T. M. Seara,
J. Math. Anal. Appl. 381 (2011), 582-589.

[55] Stable inversion of Abel equations: application to tracking control in DC-DC nonminimum phase boost converters,
J. M. Olm, X. Ros-Oton, Y. B. Shtessel,
Automatica J. IFAC 47 (2011), 221-226.

[56] Approximate tracking of periodic references in a class of bilinear systems via stable inversion,
J. M. Olm, X. Ros-Oton,
Discrete Contin. Dyn. Syst. Ser. B 15 (2011), 197-215.

EXPOSITORY PAPERS, SHORT NOTES, BOOK CHAPTERS

[57] Mirando hacia el futuro: Problemas de frontera libre,
X. Ros-Oton,
La Gaceta de la RSME 24 (2021), 399-416.

[58] Regularitat i singularitats en problemes de frontera lliure,
X. Ros-Oton, J. Serra,
Butlletí de la SCM 35 (2020), 155-176.

[59] Understanding singularities in free boundary problems,
X. Ros-Oton, J. Serra,
Matematica, Cultura e Società 4 (2019), 107-118.
Special volume in honor of Alessio Figalli.

[60] Free boundaries and obstacle problems: an overview,
X. Ros-Oton,
SeMA J. 75 (2018), 399-419.

[61] Boundary regularity, Pohozaev identities, and nonexistence results,
X. Ros-Oton,
Chapter 9 in 'Recent developments in the Nonlocal Theory', De Gruyter, 2018.

[62] Nonlocal elliptic equations in bounded domains: a survey,
X. Ros-Oton,
Publ. Mat. 60 (2016), 3-26.

[63] Euclidean balls solve some isoperimetric problems with nonradial weights,
X. Cabré, X. Ros-Oton, J. Serra,
C. R. Math. Acad. Sci. Paris 350 (2012), 945-947.

[64] Fractional Laplacian: Pohozaev identity and nonexistence results,
X. Ros-Oton, J. Serra,
C. R. Math. Acad. Sci. Paris 350 (2012), 505-508.

Research projects

ERC Consolidator Grant 2023 — 10/2024 - 09/2029
Project: "*Stable solutions and non-standard diffusions: PDE questions arising in Mathematical Physics*"
PI: X. Ros-Oton
Awarded amount: 1,682,500 €

AEI Generación de Conocimiento project (Spain) — 2022 - 2025
Project: "*PDE and Fluid Mechanics*"
PI: X. Ros-Oton
Awarded amount: 205,700 €

ERC Starting Grant 2018 — 01/2019 - 09/2024
Project: "*Regularity and singularities in elliptic PDE's: beyond monotonicity formulas*"
PI: X. Ros-Oton
Awarded amount: 1,335,250 €

SNSF Research Project (Switzerland) — 04/2018 - 08/2020
Project: "*Integro-differential elliptic equations*"
PI: X. Ros-Oton
Awarded amount: 200,000 CHF

Start-up Grant J. L. Rubio de Francia — 10/2017 - 09/2020
BBVA Foundation
PI: X. Ros-Oton
Amount: 35,000€

NSF Analysis Grant DMS-1565186 (USA) — 07/2016 - 08/2017
Project: "*Regularity theory for elliptic equations and free boundaries*"
PI: X. Ros-Oton
Awarded amount: $103,617

Editorial work

- Editor for *Rev. Mat. Iberoam.* (2023 - present)
- Editor for *Calc. Var. PDE* (2020 - 2023)
- Editor for *Disc. Cont. Dyn. Syst. A* (2023 - present)
- Editor for *Nonlinear Analysis* (2020 - 2023)
- Editor for *Collectanea Math.* (2021 - present)
- Scientific Committee for *Rev. Acad. Cienc. Ser. A Math.* (2022 - present)

Organization of conferences

- *MFO workshop: Partial Differential Equations*
  Organizers: A. Fraser, X. Ros-Oton, F. Schulze.
  Oberwolfach, July 2025.

- *MFO–RIMS Tandem workshop: Nonlocality in Analysis, Probability and Statistics*
  Organizers: K. Bogdan, A. Kohatsu-Higa, X. Ros-Oton, R. Schilling.
  Oberwolfach–Kyoto, March 2022.

- *PDEs and Geometric Measure Theory*
  Organizers: A. Figalli, X. Ros-Oton, J. Serra.
  Zürich, October 2018.

Mentoring

PhD students

- *Clara Torres Latorre*, 2020-2024.
- *Teo Kukuljan*, 2019-2022.

Postdocs

- *Philipp Zimmermann*, 2023-2025.
- *Juan Carlos Cantero*, 2023-2024.
- *Marvin Weidner*, 2022-2025.
- *Bruno Vergara*, 2019-2022.
- *Alessandro Audrito*, 2019-2020.
- *Nicola Abatangelo*, 2018-2019.

Other

- *Jack Thompson*, visiting PhD student, Fall 2022 and Fall 2023.
- *Giorgio Tortone*, visiting postdoc, Spring 2020.
- *Juan Carlos Felipe*, visiting PhD student, Fall 2019.
- *Xavier Fernandez-Real*, PhD Reading Courses 2015-2016.

Undergraduate students

- *Jan Lewenstein*, Bachelor's Degree Thesis, Fall 2023.
- *Simon Le Bouëdec*, visiting Master student (ENS Rennes), Spring 2023.
- *Joan Domingo*, Bachelor's Degree Thesis, Spring 2023.
- *Marcos Llorca*, Master's Thesis (UAM, coadvised with M. Medina), Spring 2023.
- *Joaquim Duran*, Beca de col·laboració, Fall 2022.
- *Maëlle Labeille*, visiting Master student (ENS Lyon), Spring 2022.
- *Gerard Castro*, introduction to research project, Summer 2022.
- *Matías Viner*, introduction to research project, Summer 2022.
- *Clara Torres Latorre*, Master's Thesis, Spring 2020.
- *Xavier Fernandez-Real*, Bachelor's Degree Thesis, Summer 2014.

Invited talks at conferences

- *14th AIMS Conference on Dynamical Systems, Differential Equations and Applications*
  Plenary talk.
  New York University at Abu Dhabi, December 2024.
- *13th Oxbridge PDE Conference*
  University of Oxford, March 2024.
- *New trends in Nonlinear PDEs, Physics and Geometry*
  BIRS Granada, January 2024.
- *Workshop on Degenerate and Singular Diffusion*
  ICMAT, Madrid, October 2023.
- *Meeting on Nonlocal PDEs and Applications*
  ICMAT, Madrid, September 2023.
- *Nonlinear Analysis and its applications in Geometry*
  China (online), July 2023.
- *Nonlinear PDEs*
  ICMAT, Madrid, July 2023.
- *Meeting on nonlinear evolution PDEs, fluid dynamics and transport equations*
  Majorana Center, Erice (Sicily), May 2023.
- *Geometric PDE Workshop*
  University of Warwick, UK, December 2022.
- *Geometric aspects of nonlinear PDE*
  Institut Mittag-Leffler (Stockholm), October 2022.
- *Partial differential equations and related functional inequalities*
  Accademia dei Lincei (Rome), September 2022.
- *BSM – BGSMath Junior Meeting*
  Plenary talk.
  Barcelona – Berlin, September 2022.
- *O. Ladyzhenskaya centennial conference on PDEs*
  Keynote speaker.
  St. Petersburg (online), July 2022.
- *Probability/PDE Interactions: Interface Models and Particle Systems*
  CIRM Marseille, April 2022.
- *Deterministic and stochastic fractional differential equations and jump processes*
  Isaac Newton Institute for Mathematical Sciences, UK, February 2022.
- *Workshop: PDE's in presence in Rome*
  Rome, February 2022.
- *Computation, Analysis and Applications of PDEs with Nonlocal and Singular Operators*
  National University of Singapore, February 2022.
- *15th International Conference on Free Boundary Problems*
  Plenary talk.
  Berlin, September 2021.
- *Regularity Theory for Free Boundary and Geometric Variational Problems*
  CIRM, Trento (Italy), September 2021.
- *New Trends in Nonlinear Diffusion: a Bridge between PDEs, Analysis, and Geometry*
  BIRS-CMO workshop in Oaxaca, September 2021.

- *SIAM Annual Meeting 2021*
  Minisymposium on Nonlocal Problems.
  Spokane (USA), July 2021.
- *Geometric and functional inequalities and recent topics in nonlinear PDEs*
  Online conference, March 2021.
- *2020 Fields Medal Symposium*
  The Fields Institute, Toronto, October 2020.
- *Recent Progress in Nonlocal Modeling, Analysis, and Computation (NMAC20)*
  Online conference, June 2020.
- *IMI Workshop in PDEs*
  UCM, Madrid, February 2020.
- *Workshop in Analysis & Probability*
  Plenary talk.
  Cardiff (Wales), December 2019.
- *Workshop in honor of Alessio Figalli*
  UPC, Barcelona, November 2019.
- *ICIAM 2019*
  Special session on "Analysis of nonlinear operators".
  Valencia, July 2019.
- *ICIAM 2019*
  Special session on "Trends in nonlocal PDEs".
  Valencia, July 2019.
- *Barcelona Analysis Conference 2019*
  Plenary talk.
  Universitat de Barcelona, June 2019.
- *Biennial Conference of the Royal Spanish Mathematical Society*
  Plenary talk.
  Santander (Spain), February 2019.
- *Winter meeting on nonlocal PDEs and applications*
  Universidad Autónoma de Madrid, December 2018.
- *Fields Medal day (Swiss Mathematical Society)*
  Colloquium talk on the work of Alessio Figalli.
  Bern, October 2018.
- *Nonlocal interactions: Dislocations and beyond*
  University of Bath, June 2018.
- *Maxwell Symposium in PDEs*
  International Centre for Mathematical Sciences (Edinburgh), December 2017.
- *Conference on Partial Differential Equations*
  KTH Stockholm, December 2017.
- *Mathematical approaches to complex systems: Statistical mechanics and PDEs*
  Convento da Arrábida (Portugal), July 2017.
- *XXV Congreso de Ecuaciones Diferenciales y Aplicaciones*
  Plenary talk on the occasion of the Antonio Valle Prize 2017.
  Cartagena (Spain), June 2017.
- *2016-17 Warwick EPSRC Symposium: Non-local equations and fractional diffusion*

Warwick University, May 2017.

- *Fall Meeting of the American Mathematical Society*
  Special session on '*New developments in the analysis of nonlocal operators*'.
  Minneapolis, October 2016.
- *3rd Conference on Nonlocal Operators and PDEs*
  Plenary talk.
  Conference Center of the Polish Academy of Sciences (Będlewo, Poland), June 2016.
- *Nonlocal Variational Problems and PDEs*
  Pacific Institute of Mathematical Sciences (Vancouver), June 2016.
- *Recent trends on elliptic nonlocal equations*
  Fields Institute (Toronto), June 2016.
- *Spring Meeting of the American Mathematical Society*
  Special session on '*Fractional calculus and nonlocal operators*'.
  East Lansing (Michigan), March 2015.
- *10th AIMS Conference on Dynamical Systems, Differential Equations and Applications*
  Special session on '*Geometric variational problems*'.
  Madrid, July 2014.
- *10th AIMS Conference on Dynamical Systems, Differential Equations and Applications*
  Special session on '*Nonlocal problems and related topics*'.
  Madrid, July 2014.
- *Recent Advances in Nonlocal and Nonlinear Analysis, Theory and Applications*
  ETH Zürich, June 2014.
- *Meeting on PDEs and Applications*
  Girona, June 2014.
- *Workshop on Non-Standard Diffusions*
  Austin, May 2014.
- *Workshop on Partial Differential Equations and applications*
  Pisa, February 2014.
- *Workshop on Nonlinear equations*
  Universidad Carlos III Madrid, October 2013.
- *Congress of young researchers of the Real Sociedad Matemática Española*
  Special session on PDEs.
  Sevilla, September 2013.
- *Conference of young researchers of the Societat Catalana de Matemàtiques*
  Special session on Analysis and PDEs.
  Barcelona, October 2012.
- *Barcelona-Boston-Tokyo Number Theory Congress in Memory of Fumiyuki Momose*
  Barcelona, May 2012.

Invited talks at seminars, colloquiums

- *Universidade Federal Fluminense.* PDE seminar, February 2023.
- *Universitat Autònoma de Barcelona.* Colloquium, November 2022.
- *Paris-Lodron University Salzburg.* Colloquium, November 2022.
- *St. Petersburg State University.* V. I. Smirnov Seminar on Mathematical Physics (online), November 2022.
- *Hong Kong University of Science and Technology.* PDE seminar, October 2022.

- *ICREA Colloquium.* Barcelona, October 2022.
- *University of Utah.* Applied Mathematics seminar, September 2022.
- *University of Helsinki.* Geometric and Functional Analysis seminar, March 2022.
- *Sapienza Università di Roma.* Analysis seminar, February 2022.
- *Corona Seminar: Inequalities on Function Spaces.* online seminar, February 2022.
- *Universidad de La Laguna.* Analysis seminar, December 2021.
- *ETH Zürich.* Analysis seminar, September 2021.
- *Indian Institute of Technology, Delhi.* PDE online seminar, June 2021.
- *Universidad de Valladolid.* Colloquium. March 2021.
- *PDE's: Italia & España.* Online seminar, December 2020.
- *Stanford University.* Geometry seminar (online), December 2020.
- *University of Warwick.* Analysis Seminar. November 2020.
- *Indian Institute of Technology, Kanpur.* PDE webinar, November 2020.
- *University of Western Australia.* PDE Seminar (online), September 2020.
- *ShanghaiTech University.* PDE Seminar (via Zoom). April 2020.
- *Universidad Carlos III de Madrid.* Colloquium. February 2020.
- *École Polytechnique Fédérale de Lausanne.* Analysis Seminar. May 2019.
- *University of Washington.* Analysis Seminar. April 2019.
- *Universitat Autònoma de Barcelona.* Analysis Seminar. November 2018.
- *Universitat de Barcelona.* Colloquium IMUB. November 2018.
- *Universität Zürich.* Videoseminar Berkeley / Bonn / Paris-Nord / Zürich. October 2018.
- *Wuhan Institute of Physics & Mathematics, Chinese Academy of Sciences.* July 2018.
- *Wuhan University.* July 2018.
- *University of Texas at Austin.* Analysis seminar. May 2018.
- *University of Houston.* PDE seminar. April 2018.
- *Universitat Politècnica de Catalunya.* Colloquium FME-UPC. April 2018.
- *Universidad Autónoma de Madrid.* PDE seminar. March 2018.
- *Instituto de Ciencias Matemáticas.* PDE's & Fluid Mechanics seminar. March 2018.
- *ETH / Universität Zürich.* Zürich Graduate Colloquim. February 2018.
- *Institut des Hautes Études Scientifiques.* Séminaire *Laurent Schwartz.* January 2018.
- *Universität Basel.* Analysis seminar. December 2017.
- *Universidad Autónoma de Madrid.* Colloquium. October 2017.
- *Massachusetts Institute of Technology.* PDE/Analysis seminar. April 2017.
- *ETH Zürich.* Analysis seminar. March 2017.
- *École Polytechnique Fédérale de Lausanne.* Colloquium. March 2017.
- *Courant Institute, New York University.* Analysis seminar. February 2017.
- *Universitat Politècnica de Catalunya.* PDE Seminar. December 2016.
- *Hausdorff Center for Mathematics (Bonn).* December 2016.
- *University of California Los Angeles.* Analysis seminar. December 2016.
- *Universität Zürich.* November 2016.
- *Rice University.* Colloquium. November 2016.
- *University of Texas at Austin.* Analysis seminar. October 2016.
- *Columbia University.* Analysis seminar. February 2016.
- *Michigan State University.* Analysis seminar. October 2015.

- *University of Copenhagen.* Analysis and Geometry seminar. June 2015.
- *African Institute of Mathematical Sciences (Senegal).* PDE seminar. June 2015.
- *University of Chicago.* PDE seminar. February 2015.
- *Universidad del País Vasco (UPV/EHU).* Analysis seminar. May 2014.
- *Universität Basel.* Analysis seminar. December 2013.
- *Università di Roma Tor Vergata.* PDE seminar. November 2013.
- *Universitat Politècnica de Catalunya.* PDE seminar. April 2013.
- *Basque Center for Applied Mathematics.* PDE seminar. February 2013.

MINICOURSES

- *Summer School JISD2024.*
  6h minicourse on 'Integro-differential elliptic equations'.
  July 2024.
- *Barcelona Graduate School of Mathematics.*
  20h minicourse on 'Harmonic measure and free boundary problems', together with X. Tolsa.
  November 2023.
- *Barcelona Introduction to Research Summer Program.*
  6h minicourse on 'Analysis and PDE', together with J. Gómez-Serrano.
  July 2022.
- *Hypatia Summer School* (Barcelona).
  6h minicourse on 'Free boundary problems'.
  June 2022.
- *Summer School at the Hausdorff Institute* (Bonn).
  Minicourse on 'Regularity of free boundaries'.
  June – July 2021.
- *Workshop on Nonlocal Operators with Applications to Jump Processes* (Dresden).
  8h online Minicourse on 'Boundary regularity for nonlocal operators'.
  October 2020.
- *Concentration period on GMT and PDE* (Seattle).
  6h online Minicourse on 'Regularity theory for free boundary problems'.
  August 2020.
- *CIME summer school "Geometric Measure Theory and Applications"* (Italy).
  6h Minicourse on 'Regularity of free boundaries in obstacle problems'.
  September 2019.
- *African Institute for Mathematical Sciences* (Senegal).
  4h Minicourse on 'Free boundary problems'.
  February 2019.
- *Huazhong University of Science and Technology* (China).
  16h Minicourse on 'Nonlocal PDE'.
  July 2018.

SCIENTIFIC AND ADMINISTRATIVE RESPONSIBILITIES

- Academic Committee member to design the new Bachelor Degree in Mathematics at UB, 2023–2024.
- Academic Committee member to design the new Master in Mathematics UB–UAB, 2022–2023.

- Member of the Hiring Committee for the following positions: tenure-track professor at UB (2021); tenured professor at UAB (2022); tenure-track professor at UB (2022); tenure-track professor at UB (2023); 2 tenure-track positions at UPC (2023).
- Member of the Faculty Board at the School of Mathematics, UB (2021 - present)
- Organizer of the *Barcelona Introduction to Research* Summer Program, 2022 and 2023.
- Co-Organizer of the IMUB Colloquium (2022 - present)
- Co-Organizer of the U. Zürich Seminar on *PDE & Math. Physics* (2018 - 2020)
- Co-Organizer of the Basel-Zürich Seminar in Analysis (2019 - 2020)
- Reviewer of research proposals for different national science agencies: DFG (Germany); NCN (Poland); FONDECYT (Chile); NWO (Netherlands).
- Scientific Committee member for the Biennial Conference of the Royal Spanish Mathematical Society 2021
- President of the Scientific Committee for the Barcelona Analysis Conference 2024
- President of the committee of the Catalan Mathematical Olympiad (2020 - present)

Science outreach & Media

- Public lecture at the BBVA Foundation.
  Title: '*Las ecuaciones que mueven el mundo*'
  Madrid, April 2018.
- Interview for the newspaper 'El Español' (April 2018)
- Video-Interview for 'SwissInfo' (August 2018)
- Interview for the newspaper 'El Periódico' (October 2019)
- Interview for the newspaper 'elDiario.es' (November 2019)
- Interview for the newspaper 'El Punt Avui' (December 2019)
- Interview for the newspaper 'El País' (January 2020)
- Public lecture for high school students.
  INS Joan Miró, Cornellà, January 2020.
- Interview for 'Els Matins de TV3' (October 2020)
- Interview for 'BTV Notícies' (July 2021)
- Interview for 'Onda Cero' (July 2021)
- Interview for the newspaper 'La Vanguardia' (August 2021)
- Interview for 'Cadena SER' (August 2021)
- Interview for 'El Mundo' (September 2021)
- Interview for 'RAC1' (September 2021)
- Interview for 'Ona Mediterrània' (October 2021)
- Inaugural Lecture of the 2021-22 academic year
  Facultat de Matemàtiques i Informàtica, UB (October 2021)
- *Quanta Magazine* has written an outreach article for the general public about our work on the Stefan problem (October 2021)

www.quantamagazine.org/mathematicians-prove-melting-ice-stays-smooth-20211006

- Commencement Speech for the 'Batxillerat CiMs-Cellex' (November 2021)
- Interview for 'Dong-A Science Magazine', South Korea (December 2021)
- Photo-Interview for 'ABC – XLSemanal' (December 2021)
- Interview for 'ATRESMEDIA – Buscando Vocaciones' (June 2022)
- Masterclass at #HACKSTEM22, organized by Siemens Gamesa and Spanish Startups, Bilbao (June 2022)
- Public science talk, Real Academia de Ciencias, Madrid (January 2023)
- Bienal Ciutat i Ciència, CCCB, Barcelona (February 2023)
- Public lecture for the "Cicle: Els grans interrogants de la ciència", Olot (March 2023)
- Interview for 'Dong-A Science Magazine', South Korea (April 2023)
- Inaugural Lecture for the 2023/24 'ESTALMAT' program, Madrid (September 2023)

CITATIONS

- 2000 citations in *Scopus*; more than 3500 in *Google Scholar*.
- One of the most cited mathematicians of my generation.
  (Source: MathSciNet and Math Genealogy Project; see http://mathcitations.github.io)