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CONTACT INFORMATION	Universitat de Barcelona Departament de Matemàtiques i Informàtica Gran Via de Les Corts Catalanes 585 08007 Barcelona	<a href="mailto:xros@icrea.cat">xros@icrea.cat</a> <a href="http://www.ub.edu/pde/xros">www.ub.edu/pde/xros</a>
POSITIONS	<b>ICREA &amp; Universitat de Barcelona</b> ICREA Research Professor & Catedràtic d'Universitat Departament de Matemàtiques i Informàtica  <b>Universität Zürich</b> Assistant Professor Institut für Mathematik  <b>University of Texas at Austin</b> R. H. Bing Instructor Department of Mathematics	09/2020 - present  09/2017 - 08/2020  08/2014 - 08/2017
EDUCATION	<b>Ph.D. in Mathematics</b> Universitat Politècnica de Catalunya Adviser: Xavier Cabré  <b>Master in Mathematics</b> Universitat Politècnica de Catalunya  <b>Degree in Mathematics</b> Universitat Politècnica de Catalunya Ranked 1st, finishing the 5 years degree in 4 years.	09/2011 - 06/2014  09/2010 - 06/2011  09/2006 - 06/2010
HONORS AND AWARDS	<ul style="list-style-type: none"> <li>• PI of the <b>ERC Consolidator Grant</b> ‘SSNSD’ (2024 - 2029) (Awarded amount: 1,682,500 €)</li> <li>• <b>Premio Nacional de Investigación para Jóvenes</b> 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 €.)</li> <li>• <b>Frontiers of Science Awards</b> 2023 (for the papers [24] and [28] 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.)</li> <li>• Ferran Sunyer i Balaguer Prize 2023 (Awarded for the book “<i>Integro-Differential Elliptic Equations</i>”, with X. Fernández-Real. The prize comes with a monetary award of 15,000 €.)</li> <li>• ‘Académico Correspondiente’ of the Spanish <b>Royal Academy of Sciences</b> (Elected on October 2022. Youngest member of the Academy.)</li> <li>• <b>Stampacchia Gold Medal</b> 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.)</li> <li>• <b>Premio Investigación Científica</b> 2019 from the Fundación Princesa de Girona</li> </ul>	

(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 annually 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 annually 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 350, Birkhäuser, 2024.
- [2] Regularity Theory for Elliptic PDEs,  
*X. Fernandez-Real, X. Ros-Oton,*  
Zürich Lectures in Advanced Mathematics. EMS books, 2022.

## ARTICLES AND PREPRINTS

- [3] Regularity for the Boltzmann equation conditional to pressure and moment bounds,  
*X. Fernández-Real, X. Ros-Oton, M. Weidner,*  
preprint arXiv (2024).
- [4]  $C^\infty$  regularity in semilinear free boundary problems,  
*D. Restrepo, X. Ros-Oton,*  
preprint arXiv (2024).
- [5]  $L^p$  estimates for the Laplacian via blow-up,  
*J. Lewenstein-Sanpera, X. Ros-Oton,*  
preprint arXiv (2024).
- [6] Improvement of flatness for nonlocal free boundary problems,  
*X. Ros-Oton, M. Weidner,*  
preprint arXiv (2024).
- [7] Regularity for nonlocal equations with local Neumann boundary conditions,  
*X. Ros-Oton, M. Weidner,*  
preprint arXiv (2024).

- [8] Optimal regularity for nonlocal elliptic equations and free boundary problems,  
*X. Ros-Oton, M. Weidner,*  
preprint arXiv (2024).
- [9] Schauder and Cordes-Nirenberg estimates for nonlocal elliptic equations with singular kernels,  
*X. Fernandez-Real, X. Ros-Oton,*  
Proc. Lond. Math. Soc. 129 (2024), e12629, 47pp.
- [10] Obstacle problems for nonlocal operators with singular kernels,  
*X. Ros-Oton, M. Weidner,*  
Ann. Sc. Norm. Super. Pisa Cl. Sci. (2024), to appear.
- [11] Semiconvexity estimates for nonlinear integro-differential equations,  
*X. Ros-Oton, C. Torres-Latorre, M. Weidner,*  
Comm. Pure Appl. Math. (2024), to appear.
- [12] Regularity theory for nonlocal obstacle problems with critical and subcritical scaling,  
*A. Figalli, X. Ros-Oton, J. Serra,*  
preprint arXiv (2023).
- [13] Optimal regularity and fine asymptotics for the porous medium equation in bounded domains,  
*T. Jin, X. Ros-Oton, J. Xiong,*  
J. Reine Angew. Math. 809 (2024), 269-300.
- [14] Optimal regularity for the fully nonlinear thin obstacle problem,  
*M. Colombo, X. Fernandez-Real, X. Ros-Oton,*  
J. Eur. Math. Soc. (2024), to appear.
- [15] Optimal regularity for supercritical parabolic obstacle problems,  
*X. Ros-Oton, C. Torres-Latorre,*  
Comm. Pure Appl. Math. 77 (2024), 1724-1765.
- [16] Global Schauder theory for minimizers of the  $H^s(\Omega)$  energy,  
*M. M. Fall, X. Ros-Oton,*  
J. Funct. Anal. 283 (2022), 109523, 50pag.
- [17] The singular set in the Stefan problem,  
*A. Figalli, X. Ros-Oton, J. Serra,*  
J. Amer. Math. Soc. 37 (2024), 305-389.
- [18] 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.
- [19] New boundary Harnack inequalities with right hand side,  
*X. Ros-Oton, C. Torres-Latorre*  
J. Differential Equations 288 (2021), 204-249.
- [20] Stable cones in the thin one-phase problem,  
*X. Fernandez-Real, X. Ros-Oton*  
Amer. J. Math. 146 (2024), 631-685.
- [21] 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.

- [22] 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”.
- [23] 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.
- [24] 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.
- [25] 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.
- [26] 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.
- [27] Obstacle problems for integro-differential operators: higher regularity of free boundaries,  
*N. Abatangelo, X. Ros-Oton,*  
Adv. Math. 360 (2020), 106931, 61pp.
- [28] 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.
- [29] 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.
- [30] Higher-order boundary regularity estimates for nonlocal parabolic equations,  
*X. Ros-Oton, H. Vivas*  
Calc. Var. Partial Differential Equations 57 (2018), 111.
- [31] 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.
- [32] The obstacle problem for the fractional Laplacian with critical drift,  
*X. Fernandez-Real, X. Ros-Oton,*  
Math. Ann. 371 (2018), 1683-1735.
- [33] The boundary Harnack principle for nonlocal elliptic equations in non-divergence form,  
*X. Ros-Oton, J. Serra,*  
Potential Anal. 51 (2019), 315-331.
- [34] Free boundary regularity in the parabolic fractional obstacle problem,  
*B. Barrios, A. Figalli, X. Ros-Oton,*  
Comm. Pure Appl. Math. 71 (2018), 2129-2159.
- [35] 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.

- [36] The structure of the free boundary in the fully nonlinear thin obstacle problem,  
*X. Ros-Oton, J. Serra,*  
Adv. Math. 316 (2017), 710-747.
- [37] 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.
- [38] 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.
- [39] Regularity theory for general stable operators: parabolic equations,  
*X. Fernandez-Real, X. Ros-Oton,*  
J. Funct. Anal. 272 (2017), 4165-4221.
- [40] 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.
- [41] 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.
- [42] 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.
- [43] Pohozaev identities for anisotropic integro-differential operators,  
*X. Ros-Oton, J. Serra, E. Valdinoci,*  
Comm. Partial Differential Equations 42 (2017), 1290-1321.
- [44] 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.
- [45] Regularity theory for general stable operators,  
*X. Ros-Oton, J. Serra,*  
J. Differential Equations 260 (2016), 8675-8715.
- [46] Boundary regularity for fully nonlinear integro-differential equations,  
*X. Ros-Oton, J. Serra,*  
Duke Math. J. 165 (2016), 2079-2154.
- [47] Nonlocal problems with Neumann boundary conditions,  
*S. Dipierro, X. Ros-Oton, E. Valdinoci,*  
Rev. Mat. Iberoam. 33 (2017), 377-416.
- [48] Boundary regularity for the fractional heat equation,  
*X. Fernández-Real, X. Ros-Oton,*  
Rev. Acad. Cienc. Ser. A Math. 101 (2016), 49-64.
- [49] 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.

- [50] Regularity for the fractional Gelfand problem up to dimension 7,  
*X. Ros-Oton,*  
J. Math. Anal. Appl. 419 (2014), 10-19.
- [51] Nonexistence results for nonlocal equations with critical and supercritical nonlinearities,  
*X. Ros-Oton, J. Serra,*  
Comm. Partial Differential Equations 40 (2015), 115-133.
- [52] The extremal solution for the fractional Laplacian,  
*X. Ros-Oton, J. Serra,*  
Calc. Var. Partial Differential Equations 50 (2014), 723-750.
- [53] Sharp isoperimetric inequalities via the ABP method,  
*X. Cabré, X. Ros-Oton, J. Serra,*  
J. Eur. Math. Soc. 18 (2016), 2971-2998.
- [54] The Pohozaev identity for the fractional Laplacian,  
*X. Ros-Oton, J. Serra,*  
Arch. Rat. Mech. Anal. 213 (2014), 587-628.
- [55] 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.
- [56] Sobolev and isoperimetric inequalities with monomial weights,  
*X. Cabré, X. Ros-Oton,*  
J. Differential Equations 255 (2013), 4312-4336.
- [57] 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.
- [58] 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.
- [59] On a factorization of Riemann's  $\zeta$  function with respect to a quadratic field and its computation,  
*X. Ros-Oton,*  
Rev. Acad. Cienc. Ser. A Math. 106 (2012), 419-427.
- [60] 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.
- [61] 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.
- [62] 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

- [63] Mirando hacia el futuro: Problemas de frontera libre,  
*X. Ros-Oton,*  
La Gaceta de la RSME 24 (2021), 399-416.
- [64] Regularitat i singularitats en problemes de frontera lliure,  
*X. Ros-Oton, J. Serra,*  
Butlletí de la SCM 35 (2020), 155-176.
- [65] Understanding singularities in free boundary problems,  
*X. Ros-Oton, J. Serra,*  
Matemática, Cultura e Societat 4 (2019), 107-118.  
Special volume in honor of Alessio Figalli.
- [66] Free boundaries and obstacle problems: an overview,  
*X. Ros-Oton,*  
SeMA J. 75 (2018), 399-419.
- [67] Boundary regularity, Pohozaev identities, and nonexistence results,  
*X. Ros-Oton,*  
Chapter 9 in ‘Recent developments in the Nonlocal Theory’, De Gruyter, 2018.
- [68] Nonlocal elliptic equations in bounded domains: a survey,  
*X. Ros-Oton,*  
Publ. Mat. 60 (2016), 3-26.
- [69] 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.
- [70] 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**

- *Joan Domingo*, 2024-present
- *Alejandro Martínez*, 2024-present
- *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

- *Joan Domingo*, Master's Thesis, Spring 2024.
- *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.
- *PDEs in Tenerife: from theory to applications*  
Universidad de la Laguna, October 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

- *Institute of Photonic Sciences, ICFO*. Colloquium, July 2024.
- *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.

ADVANCED  
COURSES

- *Summer School JAE Intro (ICMAT, Madrid).*  
6h minicourse on ‘Stable solutions to nonlinear elliptic PDE’.  
July 2024.
- *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)
- Creator and organizer of the *Barcelona Introduction to Research* Summer Program, 2022, 2023 and 2024.
- 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
- Jury member for the Stampacchia Gold Medal 2024

SCIENCE  
OUTREACH  
& MEDIA

- Evaluation committee member for the 'Ramón y Cajal program' 2023
- President of the committee of the Catalan Mathematical Olympiad (2020 - present)
- 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](http://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 – XLSeanal' (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)

- ICFO Colloquium, Institute of Photonic Sciences, Barcelona (July 2024)
- Public lecture for the “Universitat de l’Experiència”, Barcelona (November 2024)

#### CITATIONS

- More than 2200 citations in *MathSciNet*; more than 4100 in *Google Scholar*.
- One of the most cited mathematicians of my generation.  
(Source: MathSciNet and Math Genealogy Project; see <http://mathcitations.github.io>)