Joaquim Serra – Publication list

RESEARCH PAPERS

- A Figalli, X Ros-Oton, J. Serra, *Regularity theory for nonlocal obstacle problems with critical and subcritical scaling.* preprint arXiv:2306.16008.
- M. Caselli, E. Florit, J. Serra, *Yau's conjecture for nonlocal minimal surfaces*, preprint arXiv:2306.07100.
- H. Chan, S. Dipierro, E. Valdinoci, J. Serra, *Nonlocal approximation of minimal surfaces: optimal estimates from stability*, arXiv:2308.06328.
- F. Franceschini, J. Serra, *Free boundary partial regularity in the thin obstacle problem*, accepted in Comm. Pure. Appl. Math.; also arXiv:2112.11104.
- X. Cabré, E. Cinti, J. Serra, *Stable solutions to the fractional Allen-Cahn equation in the nonlocal perimeter regime*, accepted in Amer. J. Math.; also arXiv:2111.06285.
- A. Audrito, J. Serra, *Interface regularity for semilinear one-phase problems*, accepted in Adv. Math.; also arXiv:2110.09210.
- A. Figalli, X. Ros-Oton, J. Serra, *The singular set in the Stefan problem*, accepted in J. Amer. Math. Soc.; also arXiv:2103.13379.
  See also M. Rovrig's story in Quanta Magazine: *Mathematicians Prove Melting Ice Stays Smooth*, [https://www.quantamagazine.org/mathematicians-prove-melting-ice-stays-smooth-20211006/]
- S. Dipierro, X. Ros-Oton, J. Serra, E. Valdinoci, *Non-symmetric stable operators: regularity theory and integration by parts*, Adv. Math. 401 (2022), Paper No. 108321.
- E. Cinti, F. Glaudo, A. Pratelli, X. Ros-Oton, J. Serra, *Sharp quantitative stability for isoperimetric inequalities with homogeneous weights*, Trans. Amer. Math. Soc. 375 (2022), no. 3, 1509–1550.
- A. Figalli, X. Ros-Oton, J. Serra, *Generic regularity of free boundaries for the obstacle problem*, Publ. Math. IHÉS 159 (2020), 181-292.
- X. Cabré, A. Figalli, X. Ros-Oton, J. Serra, *Stable solutions to semilinear elliptic equations are smooth up to dimension 9*, Acta Math. 224 (2020), 187-252.
- X. Fernández-Real, J. Serra, *Regularity of minimal surfaces with lower dimensional obstacles*, J. Reine Angew. Math. 767 (2020), DOI: https://doi.org/10.1515/crelle-2019-0035.
- X. Cabré, E. Cinti, J. Serra, *Stable s-minimal cones in R^3 are flat for $s \sim 1$*, J. Reine Angew. Math 764 (2020), DOI: https://doi.org/10.1515/crelle-2019-0005 .
- A. Figalli, J. Serra, *On the fine structure of the free boundary for the classical obstacle problem*, Invent. Math. 215 (2019), 311-366.
- S. Serfaty, J. Serra, *Quantitative stability of the free boundary in the obstacle problem*, Anal. PDE 11 (2018), 1803-1839.
- A. Figalli, J. Serra, *On stable solutions for boundary reactions: a De Giorgi type result in dimension 4+1*, Invent. Math. 219 (2020), 153-177.
- S. Dipierro, J. Serra, E. Valdinoci, *Improvement of flatness for nonlocal phase transitions*, Amer. J. Math. 142 (2020), 108-1160.
- S. Dipierro, J. Serra, E. Valdinoci, *Nonlocal phase transitions: rigidity results and anisotropic geometry*, Rend. Semin. Mat. Univ. Politec. Torino 74 (2016), 135-149.
- X. Ros-Oton, J. Serra, *The boundary Harnack principle for nonlocal elliptic equations in non-divergence form*, J. Potential Anal. 51 (2019), 51-315.
- X. Ros-Oton, J. Serra, *The structure of the free boundary in the fully nonlinear thin obstacle problem*, Adv. Math. 316 (2017), 710-747.
- E. Cinti, J. Serra, E. Valdinoci, *Quantitative flatness results and BV-estimates for nonlocal minimal surfaces*, J. Differential Geom. 112 (2019), 447-504.
- L. Caffarelli, X. Ros-Oton, J. Serra, *Obstacle problems for integro-differential operators: regularity of solutions and free boundaries*, Invent. Math. 208 (2017), 1155-1211.
- X. Ros-Oton, J. Serra, *Boundary regularity estimates for nonlocal elliptic equations in C^1 and $C^{1,\alpha}$ domains*, Ann. Mat. Pura Appl. 196 (2017), 1637-1668.
- X. Cabré, J. Serra, *An extension problem for sums of fractional Laplacians and 1-D*

symmetry of phase transitions, Nonlinear Anal. Theor. 137 (2016), 246-265.

- X. Ros-Oton, J. Serra, E. Valdinoci, *Pohozaev identities for anisotropic integro-differential operators*, Comm. Partial Differential Equations 42 (2017), 1290-1321.
- X. Ros-Oton, J. Serra, *Boundary regularity for fully nonlinear integro-differential equations*, Duke Math. J. 165 (2016), 2079-2154.
- X. Ros-Oton, J. Serra, *Regularity theory for general stable operators*, J. Differential Equations 260 (2016), 8675-8715.
- X. Ros-Oton, J. Serra, *Local integration by parts and Pohozaev identities for higher order fractional Laplacians*, Discrete Contin. Dyn. Syst. A 35 (2015), 2131-2150.
- J. Serra, *$C^{\sigma+\alpha}$ regularity for concave nonlocal fully nonlinear elliptic equations with rough kernels*, Calc. Var. Partial Differential Equations 54 (2015), 3571-3601.
- J. Serra, *Regularity for fully nonlinear nonlocal parabolic equations with rough kernels*, Calc. Var. Partial Differential Equations 54 (2015), 615-629.
- X. Ros-Oton, J. Serra, *Nonexistence results for nonlocal equations with critical and supercritical nonlinearities*, Comm. Partial Differential Equations 40 (2015), 115-133.
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- X. Ros-Oton, J. Serra, *The extremal solution for the fractional Laplacian*, Calc. Var. Partial Differential Equations 50 (2014), 723-750.
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- X. Ros-Oton, J. Serra, *The Dirichlet problem for the fractional Laplacian: regularity up to the boundary*, J. Math. Pures Appl. 101 (2014), 275-302.
- X. Cabré, X. Ros-Oton, J. Serra, *Euclidean balls solve some isoperimetric problems with nonradial weights*, C. R. Math. Acad. Sci. Paris 350 (2012), 945-947.
- X. Ros-Oton, J. Serra, *Fractional Laplacian: Pohozaev identity and nonexistence results*, C. R. Math. Acad. Sci. Paris 350 (2012), 505-508.
- J. Serra, *Radial symmetry for diffusion equations with discontinuous nonlinearities*, J. Differential Equations 254 (2013), 1893-1902.

Surveys and expository papers

- J. Serra *From branching singularities in minimal surfaces to, non-smoothness points in ice-water interfaces*, Proceedings of the 8th European Congress of Mathematicians 2020 (in press).
- J. Serra, *The geometric structure of interfaces and free boundaries*, EMS Magazine 120, 8-15.
- X. Ros-Oton, J. Serra, *Regularity and singularities in free boundary problems*, Catalan) Butl. Soc. Catalana Mat. 35 (2020), 155–176.
- X. Ros-Oton, J. Serra, *Understanding singularities in free boundary problems*, Mat. Cult. Soc. Riv. Unione Mat. Ital. 4 (2019), 107-118.