

Curriculum Vitæ

Luca Rossi

Personal data

- Born: August 29, 1979, in Rome, Italy
- Citizenship: Italian
- Address: Centre d'Analyse et de Mathématique Sociales
54, boulevard Raspail
75006 Paris - France
- Phone: (+33)(0) 1 49 54 84 29
- Email: luca.rossi@ehess.fr

Professional experience

- March 2017: ASN (Italian Scientific Qualification) as Full Professor
- October 2015: CNRS Researcher,
Laboratoire CAMS, EHESS, Paris
- December 2008: Researcher in Analysis
Department of Mathematics, University of Padova
- April - October 2008: Post-doc at CAMS - EHESS, Paris, for the ANR project “URTICLIM”
- December 2006: PhD in Mathematics,
at the Sapienza University of Rome (advisor: prof. I. Capuzzo Dolcetta) in cooperation
agreement with the University of Paris 6 “Pierre et Marie Curie” (advisor: prof. H. Berestycki). Title of the PhD thesis: *Generalized principal eigenvalue in unbounded domains and applications to nonlinear elliptic and parabolic problems*
- June 2003: Diplôme d'Études Approfondies (DEA): Analyse Numérique,
at the Jacques Louis Lions Laboratory of the University of Paris 6 “Pierre et Marie Curie”,
mention très bien
- July 2002: Degree in Mathematics *cum laude*,
at the Sapienza University of Rome (first inscription: October 1998). Title of the degree thesis: *Viscosity solutions for fully nonlinear obstacle problems*, advisor: prof. G. M. Troianiello.

Areas of interest

- Analysis
- Elliptic and parabolic partial differential equations
- Population dynamics.

Selected plenary talks

- *Journée d'inauguration du Programme PSL-Maths*
ENS Paris, France, October 2017
- *Mostly Maximum Principle*
Banff, Canada, April 2017
- *Asymptotic Problems for Partial Differential Equations and Viscosity Solutions*
Kyoto University, Japan, December 2015
- *Mostly Maximum Principle*
Agropoli, Italy, September 2015
- *Espalia*
Sapienza University of Rome, Italy, June 2015
- *Nonlinear elliptic PDEs at the End of the World*
Punta Arenas, Chile, March 2015
- *Mathematical Models for Social Sciences*
Laboratoire JLL Paris 6 and CAMS - EHESS, France, December 2014
- *Front Propagation and Particle Systems*
Banff, Canada, August 2014
- *Impact of climate change on biological invasions and population distributions*
Banff, Canada, May 2013
- *Mostly Maximum Principle*
Sapienza University of Rome, Italy, September 2012
- *ERC Workshop on Geometric Partial Differential Equations*
Scuola Normale Superiore, Pisa, Italy, September 2012
- *Positivity: a key to fully-nonlinear equations*
Vetri, Italy, June 2010
- *2nd Meeting of Women of the Laplacian*
Monopoli, Italy, June 2010
- *8th Seminar of differential equations and Dynamical Systems*
Isfahan University of Technology, Iran, July 2008
- *Mathematical Modeling and Analysis in Biological and Chemical Systems*
University Paris-Sud XI and IHÉS, France, September 2007

- *Workshop on Reaction-Diffusion and Free Boundary Problems*
Banff, Canada, March 2006
- *Journées du CERMICS*
École nationale des ponts et chaussées, Paris, France, March 2006.

Selected communications

- 24/03/2017 Laboratoire Jacques-Louis Lions, Paris - Seminar LJLL
- 14/03/2017 Bruxelles University - *Seminar ANLEDP*
- 08/03/2016 Montpellier University - *ACSIOM Seminar*
- 21/05/2014 Stanford University - *Applied Math Seminar*
- 09/12/2013 Sapienza University of Rome - *Seminario di Analisi Matematica*
- 13/03/2012 LATP Marseille - *Séminaire Analyse Appliquée*
- 10/03/2011 University of Chicago - *Nonlinear PDEs Seminar*
- 11/05/2010 University of Chicago - *Nonlinear PDEs Seminar*
- 23/06/2009 Tor Vergata University of Rome 2 - *Seminario di Equazioni Differenziali*
- 14/01/2008 INRIA, Paris - *Équipe SISYPHE*
- 24/05/2007 FDP, University of Tours - *Séminaire d'Analyse*

Funds and research projects

- 2017 - present: **Coordinator** of the French-German-Italian LIA “COPDESC”, for the theme “nonlinear PDEs”
- 2014 - present: **Member** of the ANR (French) project “Nonlocal : Propagation phenomena and nonlocal equations”, PI: F. HAMEL
- 2013 - present: **Member** of the ERC Advanced Grant 2012 project “ReaDi : Reaction-Diffusion Equations, Propagation and Modelling”, PI: H. BERESTYCKI
- 2014: **Principal Investigator** of the GNAMPA-INdAM (Italy) project “Propagation phenomena on lines and networks”. Grant: € 2.400; duration: 1 year
- 2011 - 2012: **Principal Investigator** of the project “Asymptotic stability of fronts for parabolic equations” of the University of Padova. Grant: € 20.000; duration: 2 years
- 2010: **Principal Investigator** of the GNAMPA-INdAM (Italy) project “Front propagation phenomena and homogenization problems”. Grant: € 5.500; duration: 1 year
- 2009 - 2010: **Member** of the PRIN (Italian national grant) “Viscosity and control methods for nonlinear diffusion degenerate models”, P.I.: I. CAPUZZO DOLCETTA

- 2008: **Member** of the ANR (France) project “URTICLIM”, P.I.: H. BERESTYCKI
- 2007 - 2008: **Member** of the PRIN (Italian national grant) “Viscosity, metric and control theory methods in nonlinear PDE’s”, P.I.: I. CAPUZZO DOLCETTA.

Workshop organization

- November 2017: *Reaction-diffusion, Propagation, Modelling*, Institut Henri Poincaré, <https://reactiondiffusion.weebly.com/>
- April 2012: *Geometric PDEs and applications*, University of Padova, <http://www.math.unipd.it/it/news/?id=996>
- June 2011: *Fronts and Nonlinear PDEs, A tribute to Henri Berestycki*, École Normale Supérieure Paris, France.

Student supervision

- March 2014 - February 2016: Daniele Castorina, Post-doc at University of Padova <http://www.math.unipd.it/castorin/>
- January 2015 - July 2015: Romain Ducasse, ENS Cachan, Master stage
- 2011: Andrea Bertazzo, Master thesis “Traveling fronts for monostable reaction-diffusion equations in cylinders”, University of Padova.

Teaching experience

- 2014/2015: Analysis 2. Department of Mathematics, University of Padova
- March 2014: “Population dynamics in the presence of a line with fast diffusion”. Spring school on Nonlinear PDEs, Sapienza University of Rome
- 2013/2014: Analysis 2. Department of Mathematics, University of Padova
- 2012/2013: Analysis 1. Department of Mathematics, University of Padova
- 2011/2012: Calculus 1. Department of Engineering, University of Padova
- 2011/2012: “Équations de réaction-diffusion et dynamiques de populations biologiques”. Master 2, Laboratoire Jacques Louis Lions, Paris 6 (in collaboration with H. Berestycki)
- April 2012: “Topics in Nonlinear Partial Differential Equations”. PhD course, University of Padova (in collaboration with L. C. Evans and P. Soravia)
- 2010/2011: Analyse 1. École Nationale Supérieure des Travaux Publics (ENSTP), Yaoundé, Camerun
- 2009/2010: Calculus 1. Department of Engineering, University of Padova

- 2008/2009: Differential equations 2. Department of Mathematics, University of Padova (in collaboration with A. Marson)
- 2008/2009: Analysis 1. Department of Physics, Sapienza University of Rome (titulars: C. Mascia, C. Pinzari, A. Pisante, A. Terracina)
- June 2008: mini-course “Reaction-diffusion equations and propagation phenomena”. CIMPA Summer School “Nonlinear analysis and Geometric PDE”, Tsaghkadzor, Armenia (titular: H. Berestycki)
- 2006/2007: Analysis 1. Department of Engineering, Sapienza University of Rome (titular: L. Moschini)
- 2004/2005: Geometry 1. Department of Engineering, Sapienza University of Rome (titular: A. Bichara)
- 2004/2005: Analysis 2. Department of Statistics, Sapienza University of Rome (titular: A. Serrecchia)
- 2003/2004: Mathematics 1 Department of Statistics, Sapienza University of Rome (titular: P. Papi)
- 2003/2004: Mathematics. Department of Biology, Sapienza University of Rome (titular: C. Maffei).

Publications

My papers can be downloaded [here](#)

Preprints

- [34] R. DUCASSE et L. ROSSI. “Blocking and invasion for reaction-diffusion equation equations in periodic media”. *Preprint* (2018).
- [33] F. HAMEL, L. ROSSI et E. RUSS. “Optimization of some eigenvalue problems with large drift”. *Preprint* (2017).

Published or accepted for publication

- [32] H. BERESTYCKI, L. ROSSI et N. RODRÍ GUEZ. “Periodic cycles of social outbursts of activity”. *J. Differential Equations* 264 (2018), p. 163–196.
- [31] L. ROSSI, A. TELLINI et E. VALDINOCI. “The effect on Fisher-KPP propagation in a cylinder with fast diffusion on the boundary”. *SIAM J. Math. Anal.* 49 (2017), p. 4595–4624.
- [30] L. ROSSI. “The Freidlin-Gärtner formula for general reaction terms”. *Adv. Math.* 317 (2017), p. 267–298.
- [29] L. ROSSI. “Symmetrization and anti-symmetrization in parabolic equations”. *Proc. Amer. Math. Soc.* 145 (2017), p. 2527–2537.
- [28] G. NADIN et L. ROSSI. “Generalized Transition Fronts for One-Dimensional Almost Periodic Fisher-KPP Equations”. *Arch. Ration. Mech. Anal.* 223 (2017), p. 1239–1267.

- [27] F. HAMEL et L. ROSSI. “Transition fronts for the Fisher-KPP equation”. *Trans. Amer. Math. Soc.* 368 (2016), p. 8675–8713.
- [26] M. BARDI, A. CESARONI et L. ROSSI. “Nonexistence of nonconstant solutions of some degenerate Bellman equations and applications to stochastic control”. *ESAIM Control Optim. Calc. Var.* 22 (2016), p. 842–861.
- [25] D. CASTORINA, A. CESARONI et L. ROSSI. “On a parabolic Hamilton-Jacobi-Bellman equation degenerating at the boundary”. *Commun. Pure Appl. Anal.* 15 (2016), p. 1251–1263.
- [24] H. BERESTYCKI, J.-M. ROQUEJOFFRE et L. ROSSI. “Travelling waves, spreading and extinction for Fisher-KPP propagation driven by a line with fast diffusion”. *Nonlinear Anal.* 137 (2016), p. 171–189.
- [23] H. BERESTYCKI, J.-M. ROQUEJOFFRE et L. ROSSI. “The shape of expansion induced by a line with fast diffusion in Fisher-KPP equations”. *Comm. Math. Phys.* 343 (2016), p. 207–232.
- [22] H. BERESTYCKI, A.-C. COULON, J.-M. ROQUEJOFFRE et L. ROSSI. “The effect of a line with nonlocal diffusion on Fisher-KPP propagation”. *Math. Models Methods Appl. Sci.* 25 (2015), p. 2519–2562.
- [21] G. NADIN et L. ROSSI. “Transition waves for Fisher-KPP equations with general time-heterogeneous and space-periodic coefficients”. *Anal. PDE* 8 (2015), p. 1351–1377.
- [20] F. HAMEL et L. ROSSI. “Admissible speeds of transition fronts for nonautonomous monostable equations”. *SIAM J. Math. Anal.* 47 (2015), p. 3342–3392.
- [19] H. BERESTYCKI et L. ROSSI. “Generalizations and properties of the principal eigenvalue of elliptic operators in unbounded domains”. *Comm. Pure Appl. Math.* 68 (2015), p. 1014–1065.
- [18] H. BERESTYCKI, I. CAPUZZO DOLCETTA, A. PORRETTA et L. ROSSI. “Maximum principle and generalized principal eigenvalue for degenerate elliptic operators”. *J. Math. Pures Appl.* (9) 103 (2015), p. 1276–1293.
- [17] L. ROSSI et L. RYZHIK. “Transition waves for a class of space-time dependent monostable equations”. *Commun. Math. Sci.* 12 (2014), p. 879–900.
- [16] H. BERESTYCKI, J.-M. ROQUEJOFFRE et L. ROSSI. “Fisher-KPP propagation in the presence of a line: further effects”. *Nonlinearity* 26 (2013), p. 2623–2640.
- [15] G. NADIN, L. ROSSI, L. RYZHIK et B. PERTHAME. “Wave-like solutions for nonlocal reaction-diffusion equations: a toy model”. *Math. Model. Nat. Phenom.* 8 (2013), p. 33–41.
- [14] H. BERESTYCKI, J.-M. ROQUEJOFFRE et L. ROSSI. “The influence of a line with fast diffusion on Fisher-KPP propagation”. *J. Math. Biol.* 66 (2013), p. 743–766.
- [13] G. NADIN et L. ROSSI. “Propagation phenomena for time heterogeneous KPP reaction-diffusion equations”. *J. Math. Pures Appl.* (9) 98 (2012), p. 633–653.
- [12] H. BERESTYCKI, J.-M. ROQUEJOFFRE et L. ROSSI. “The periodic patch model for population dynamics with fractional diffusion”. *Discrete Contin. Dyn. Syst. Ser. S* 4 (2011), p. 1–13.
- [11] L. ROSSI. “Liouville type results for periodic and almost periodic linear operators”. *Ann. Inst. H. Poincaré Anal. Non Linéaire* 26 (2009), p. 2481–2502.

- [10] H. BERESTYCKI et L. ROSSI. “Reaction-diffusion equations for population dynamics with forced speed. II. Cylindrical-type domains”. *Discrete Contin. Dyn. Syst.* 25 (2009), p. 19–61.
- [9] M. E. AMENDOLA, L. ROSSI et A. VITOLO. “Phragmén-Lindelöf principles for nonlinear elliptic equations”. *J. Math. Sci. Adv. Appl.* 2 (2009), p. 43–63.
- [8] H. BERESTYCKI et L. ROSSI. “Reaction-diffusion equations for population dynamics with forced speed. I. The case of the whole space”. *Discrete Contin. Dyn. Syst.* 21 (2008), p. 41–67.
- [7] M. E. AMENDOLA, L. ROSSI et A. VITOLO. “Harnack inequalities and ABP estimates for nonlinear second-order elliptic equations in unbounded domains”. *Abstr. Appl. Anal.* (2008), Art. ID 178534, 19.
- [6] L. ROSSI. “Non-existence of positive solutions of fully nonlinear elliptic equations in unbounded domains”. *Commun. Pure Appl. Anal.* 7 (2008), p. 125–141.
- [5] H. BERESTYCKI, F. HAMEL et L. ROSSI. “Liouville-type results for semilinear elliptic equations in unbounded domains”. *Ann. Mat. Pura Appl. (4)* 186 (2007), p. 469–507.
- [4] L. ROSSI et A. R. L. VALDEZ. “Diffusion influence on the speed of traveling fronts in KPP-type problems: 1-D case”. *Matimyas Mat.* 29 (2006), p. 59–63.
- [3] H. BERESTYCKI et L. ROSSI. “On the principal eigenvalue of elliptic operators in \mathbb{R}^N and applications”. *J. Eur. Math. Soc. (JEMS)* 8 (2006), p. 195–215.

Seminars

- [2] H. BERESTYCKI, A.-C. COULON, J.-M. ROQUEJOFFRE et L. ROSSI. “Speed-up of reaction-diffusion fronts by a line of fast diffusion”. *Séminaire Laurent Schwartz—Équations aux Dérivées Partielles et Applications. Année 2013–2014*. Ed. Éc. Polytech., Palaiseau, 2014, Exp. No. XIX, 25.

Chapters of books

- [1] L. ROQUES, J.-P. ROSSI, H. BERESTYCKI, J. ROUSSELET, J. GARNIER, J.-M. ROQUEJOFFRE, L. ROSSI, S. SOUBEYRAND et C. ROBINET. “Modeling the spatio-temporal dynamics of the pine processionary moth”. *Processionary Moths and Climate Change: An Update*. Berlin : Springer, 2015, p. 227–263.

Reviewer

Ann. Inst. H. Poincaré, Anal. Non Linéaire, Calc. Var. Partial Differential Equations, Comm. Partial Differential Equations, J. Differential Equations, J. London Math. Soc., Mem. Amer. Math. Soc., Nonlinear Anal., Nonlinearity, Trans. Amer. Math. Soc.