

# Curriculum Vitae

## Cédric Bernardin

### Personal History

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Name : *BERNARDIN Cédric*  
Citizenship : *french*  
Date of birth : *February 4, 1977*  
Position : *Full Professor*  
Address : *Laboratoire J.A. Dieudonné UMR CNRS 7351 Université de Nice Sophia Antipolis  
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### Education/Position

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- 2013- : Full Professor, Université de Nice Sophia-Antipolis.
- 2005-2013 : CNRS researcher (Umpa, UMR CNRS 5669). “Habilitation thesis” (November 22, 2012).
- 2002-2005 : Agrégé-préparateur (kind of assistant professor position) at the Ecole Normale Supérieure de Cachan. Ph.D 2004.
- 1997-2001 : Student at École Normale Supérieure Cachan. Licence (1998), Master (1999), Agrégation de Mathématiques” with rank 10 (2000).

### Honors-Grants

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- PES (Prime d’Excellence Scientifique) (2014-2018).
- ANR grant LSD, 2016-2019 (Coordinator : T. Bodineau, S. Olla, F. Toninelli); ANR grant JCJC EDNHS, 2014-2018 (Coordinator : C. Bernardin); ANR grant SHEPI, 2011-2014 (Coordinator : E. Saada ); ANR grant LHMSHE, 2007-2010 (Coordinator : T. Bodineau); PHC Balaton 19458UK grant , 2008-2010 (Coordinator : C. Bernardin, J. Fritz); “NESP - Non-Equilibrium Statistical Physics”, 2011-2013 (Coordinator : P. Gonçalves); PHC Pessoa 27256RB grant, 2012-2014 (Coordinator : C. Bernardin, P. Gonçalves).

### Teaching

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- 2014-2016 : Master Course “Stochastic calculus and Finance”; Master Course ”Martingales and Markov Chains”; Teachings of 2nd year of University (Probability and Statistics) (University of Nice, 192h).
- 2013-2014 : Master Course “Stochastic calculus and Finance”; Teachings of 2nd year of University (Probability and Statistics, Algebra) (University of Nice, 96h).
- 2012-2013 : Master Course “Stochastic calculus and Markov Processes” (Ens-Lyon, 30h).
- 2012, February : Mini-course ”Normal and anomalous diffusion in perturbed Hamiltonian systems” (IMPA, 10h).

- 2008-2010 : Master Course “ Introduction to the theory of hydrodynamic limits” (Ens-Lyon, 30h).
- 2002-2005 : Course of probability theory for students preparing the agrégation (master level). Course of probability theory of 3rd year of University (Ens-Cachan, 192h).
- 2001-2002 : Teachings of 2nd year of University (Algebra, Analysis) (University of Cergy-Pontoise, 64h)

## Training and Evaluation

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- PhD Students :
  - Sept. 2011- June 2014 : Marielle Simon (now Inria researcher), in codirection with Stefano Olla.
  - Feb. 2015- . . . : Byron Oviedo Jimenez, in codirection with Patricia Gonçalves.
- Master Students : Thi Thanh Diu (M2 2014), Imene Khames (M2 2015), Florian Borgna (M1 2015), Charles Leriche (M1 2015), Florian Fara (2016), Nour-Allah Said (2016).
- Participation in jurys : Paul-Eric Chaudru de Raynal (2013), Tanguy Laffargue (2014), Emilie Soret (2015), Van Bien Bui (2015), Matteo Marcozzi (2016), Leonardo de Carlo (2017).

## Editorial and Administrative duties

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- Head of the Probability and Statistics team of University of Nice (2016-...).
- Director of Master 2 IM, University of Nice (2015-...).
- Member of the editorial board of Journal of Statistical Physics (2013-).
- Co-editor (with P. Goncalves) of the proceedings of the international conference PSPDE 2012.
- Referee for Annals of Probability, Probability Theory and Related Fields, Annales de l’Institut Henri Poincaré, Communications in Mathematical Physics, Journal of Statistical Physics, Journal of Mathematical Physics, Physical Review Letters . . .
- Referee for ANR grants and European grants.
- Member of hiring committees in France.
- Member of the Internship Commission, theses and clearances of Mathematics department at University of Nice (2015-...).
- Member of the “Faclab” project of the University of Nice (2016-).
- Oral examination committee of ENS-Lyon “second concours” (2008-2012).

## Organization of conferences

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- “PSPDE VI”, Nice, France (Nov. 27- Dec.1, 2017).
- “Interacting Particle Systems”, SPA 2017 Session, Moscow, Russia (July 24-July 28, 2017).
- “Mathematical Physics : From Field Theory to Non-Equilibrium”, Nice, France (June 19-21, 2017).
- “Non-equilibrium Statistical Physics” at the ICTS-TIFR, Bangalore, India (Oct. 26- Nov. 20, 2015).
- “ Rencontres Niçoises Physique Théorique et Probabilités”, Nice, France (Oct. 15-16, 2015).
- “Progress in Non-equilibrium Statistical Mechanics”, Nice, France (June 8-June 12, 2015).
- “Rencontres Régionales Analyse-Probabilités” (2012).

## Publications

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- Regularity of the diffusion coefficient for lattice gas reversible under Bernoulli measures, *Stochastic Processes and their Applications* 101, 43-68 (2002).
- Fluctuations in the occupation time of a site in the asymmetric simple exclusion process, *The Annals of probability* 32, no 1-B, 855-879 (2004).
- Fluctuations in Kawasaki dynamics, *Journal of Statistical Physics* 119, Numbers 3-4, 827-852 (2005).
- Fourier’s law for a microscopic model of heat conduction (with S. Olla), *Journal of Statistical Physics* 121, 271-289 (2005).
- Momentum conserving model with anomalous thermal conductivity in low dimensional systems (with G. Basile and S. Olla), *Physical Review Letters* 96, 204303 (2006).
- Hydrodynamics for a system of harmonic oscillators perturbed by a conservative noise, *Stochastic Processes and their Applications*, 117, 487-513 (2007).
- Heat conduction model : stationary non-equilibrium properties, *Physical Review E* 78, Issue 2, id. 021134 (2008).
- Thermal conductivity for a noisy disordered harmonic chain, *Journal of Statistical Physics* 133, number 3, 417-433 (2008).
- Superdiffusivity of Asymmetric Energy Model in dimension one and two, *Journal of Mathematical Physics* 49, 103301 (2008).
- Thermal conductivity for a momentum conserving model, (with G. Basile and S. Olla), *Communications in Mathematical Physics*, 287, 1, 67-98 (2009).
- Entropy of nonequilibrium stationary states of boundary driven symmetric simple exclusion processes (with C. Landim), *Journal of Statistical Physics* 6, 141, 1014-1038, (2010).
- Homogenization results for a linear dynamics in random Glauber type environment, *Annales de l’Institut Henri Poincaré B*, 48, No. 3, 792-818, (2012).
- Thermal conductivity for a chain of anharmonic oscillators perturbed by a conservative noise, *Journal of Difference Equations and Applications*, 1563-5120, (2011).
- A simple particle model to approximate a system of coupled equations with absorbing collision term (with V. Ricci), *Kinetics and Related Models*, 4, no 3, 633 - 668, (2011).
- Transport Properties of a Chain of Anharmonic Oscillators with random flip of velocities (with S. Olla), *Journal of Statistical Physics*, 145, 1224-1255, (2011).
- Anomalous diffusion for a class of systems with two conserved quantities (with G. Stoltz), *Nonlinearity*, *Nonlinearity* 25, Num. 4, 1099 doi :10.1088/0951-7715/25/4/1099 (2012).
- A one-dimensional coagulation-fragmentation process with a dynamical phase transition, (with F.L. Toninelli), *Stochastic Processes and their Applications*, 122, Issue 4, 16721708 (2012).
- Nonequilibrium Stationary States of Harmonic Chains with Bulk Noises, (with J.L. Lebowitz, J. Lukkarinen and V.Kannan), *European Physical Journal B* 84, 685-689 (2011).
- Harmonic Systems with Bulk Noises, (with J.L. Lebowitz, J. Lukkarinen and V.Kannan), *Journal of Statistical Physics*, 146, Num. 4, 800-831(2012).
- Small perturbation of a disordered harmonic chain by a noise and an anharmonic potential, (with F. Huveneers), *Probability and Theory Related Fields*, 1-31 (2012).
- Anomalous fluctuations for a perturbed Hamiltonian system with exponential interactions, (with P. Gonçalves), *Communications in Mathematical Physics* 325, 291-332, (2014).
- Entropy of non-equilibrium stationary measures of boundary driven TASEP, (with P. Gonçalves and C. Landim), *Journal of Statistical Physics* 154, 1-2, 378–420, (2014).

- Superdiffusion of energy in Hamiltonian systems perturbed by a conservative noise, From Particle Systems to Partial Differential Equations, Springer Proceedings in Mathematics & Statistics 75, (2013).
- Equilibrium fluctuations of additive functionals of zero-range models,(with P. Gonçalves and S. Sethuraman), From Particle Systems to Partial Differential Equations, Springer Proceedings in Mathematics & Statistics 75, (2013).
- On the expansion of the Green-Kubo formula for weak coupling, (with F. Huveneers, J.L. Lebowitz, C. Liverani and S.Olla), Communications in Mathematical Physics, **334**, no. 3, 13771412. (2015).
- Diffusion of Energy in Chains of Oscillators with Conservative Noise, From Particle Systems to Partial Differential Equations II, Springer Proceedings in Mathematics & Statistics **129**, 3-66, (2015).
- 3/4 Fractional superdiffusion of energy in a system of harmonic oscillators perturbed by a conservative noise, (with P. Gonçalves and M. Jara), Arch. Ration. Mech. Anal. **220**, no. 2, 505-542, (2016).
- Occupation times of long-range exclusion and connections to KPZ class exponents, (with P. Gonçalves and S. Sethuraman), Probab. Theory Relat. Fields DOI 10.1007/s00440-015-0661-5 (2015) .
- Towards a crossover between diffusive to non-diffusive behavior in the evanescent flip noise limit, (with P. Gonçalves, M. Jara, M. Sasada and M. Simon), J. Stat. Phys. **159** (2015), no. 6, 1327–1368.
- Thermal conductivity in harmonic lattices with random collisions, (with G. Basile, M. Jara, T. Komorowski and S. Olla), 'Thermal transport in low dimension', Lecture Notes in Physics **921**, Springer, (2016).
- Fractional Fick's law for the boundary driven exclusion with long jumps,(with B. Jimenez Oviedo), preprint (2016).
- Interpolation process between standard diffusion and fractional diffusion, (with P. Gonçalves, M. Jara and M. Simon), preprint (2016).
- Weakly harmonic oscillators perturbed by a conservative noise, (with P. Gonçalves and M. Jara), preprint (2016).
- Density large deviations for multidimensional stochastic hyperbolic conservation laws, (with J. Barr and R. Chetrite), preprint (2016).
- Slow to fast infinitely extended reservoirs for the symmetric exclusion process with long jumps (with P. Gonçalves and B. Oviedo Jimenez), preprint (2016).

## Conferences (invited)

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- *Mathematical Physics Seminar of Rome 1*, Rome (Italy), February 22, 2017.
- *PSPDE V*, Braga (Portugal), November 28-November 30, 2016.
- *Large Scale Stochastic Dynamics*, Oberwolfach (Germany), November 13-November 19, 2016
- *The 4th Institute of Mathematical Statistics Asia Pacific Rim Meeting*, Hong-Kong, June 27-30, 2015.
- *Probability Seminar of Lille 1*, Lille (France), February 22, 2016.
- *PSPDE IV*, Braga (Portugal), December 16-18, 2015.
- *Non-equilibrium Statistical Physics*, ICTS-TIFR, Bangalore, India, Oct. 26- Nov. 6, 2015.
- *Stochastic Processes and their Applications*, Oxford (UK), July 13-17, 2015.
- *Progress in Non-equilibrium Statistical Mechanics*, Nice (France), June 8-12, 2015.
- *Averaging and Homogenization in Deterministic and Stochastic Systems*, CIRM (France), May 11-15, 2015.
- *Interacting Particles Systems and Non-equilibrium Dynamics*, IHP (France), March 9-13, 2015.
- *Workshop on Large Deviations in Statistical Physics at NITheP*, Stellenbosch (South Africa), November 3-14, 2014.
- *Rencontres Mathématiques de Rouen*, Rouen University, Rouen (France), June 18-20, 2014

- *Advances in Nonequilibrium Statistical Mechanics : large deviations and long-range correlations, extreme value statistics, anomalous transport and long-range interactions*, Galileo Galilei Institute for Theoretical Physics, Florence (Italy), May 26- May 30, 2014.
- *Probability seminar*, Paris IX University (France), March 13, 2014.
- *Mathematical Physics seminar*, Rutgers university (New-Jersey), February 20, 2014.
- *Probability seminar*, Institute of Advanced Study, Princeton (New Jersey), February 18, 2014.
- *Particle systems and PDE's II*, Braga (Portugal), December 12-13, 2013.
- *Large Scale Stochastic Dynamics*, Oberwolfach (Germany), October 27-November 2, 2013
- *Kinetic Description of Multiscale Phenomena*, Heraklion (Crete), June 17-21, 2013.
- *Workshop1 : Randomness and Partial Differential Equations*, Nantes (France), April 15-17, 2013.
- *Probability Seminar of Nice*, Nice (France), March 21, 2013.
- *Probability Seminar of Lille 1*, Lille (France), January 30, 2013.
- *Particle systems and PDE's*, Braga (Portugal), December 5-7, 2012.
- *Nonequilibrium Statistical Mechanics : Mathematical Understanding and Numerical Simulation*, Banff (Canada), November 12-16, 2012.
- *Probability seminar of Toulouse*, Toulouse (France), October 9, 2012.
- *Interacting Particles systems*, Florence (Italy), August 27-31,2012.
- *Probability seminar of Marseille*, Marseille (France), March 9, 2012.
- *Probability seminar of IMPA*, Rio de Janeiro (Brazil), February 14, 2012.
- *Probability seminar of Grenoble*, Grenoble (France), December 13, 2011.
- *Colloque du GDR Chant*, Grenoble (France), November 23-25, 2011.
- *Foundations and Applications of Non-Equilibrium Statistical Mechanics*, Nordita, Stockholm (Sweden), October 3-7, 2011.
- *105th Statistical Mechanics Conference*, Rutgers university (New Jersey), May 8-10, 2011.
- *Mathematical Physics seminar*, Rutgers university (New-Jersey), April 14 , 2011.
- *Workshop on the Fourier Law and Related Topics*, Fields Institute, Toronto (Canada), April 4-8, 2011
- *Large Scale Stochastic Dynamics*, Oberwolfach (Germany), November 7-13, 2010
- *Mathematical Physics seminar*, Rutgers university (New-Jersey), October 14, 2010.
- *Probability seminar of University of Rennes 1*, Rennes (France), January 4, 2010
- *Probability seminar of Budapest Univeristy*, Budapest (Hungary), december 17, 2009
- *Probability seminar of IMPA*, Rio de Janeiro (Brazil), november 12, 2009
- *ANR EVOL meeting*, Toulouse, october 15, 2009
- *Stochastic Processes and Applications 2009*, Berlin (Germany), July 27-31, 2009.
- *Interacting Stochastic Particle Systems*, Montreal (Canada), May 18-23, 2009.
- *Heat conduction in low dimensional systems*, Bangalore (India), March 15-21, 2009.
- *Dynamics and Applications*, Braga (Portugal), September 8-12, 2008
- *Numerical methods in molecular simulation*, HIM, Bonn (Germany), April 7-11, 2008
- *GREFI-MEFI, Non-equilibrium phenomena*, CIRM, Marseille (France), February 18-22, 2008
- *Seminar of probability of Budapest University of Technology and Economics*, November 29, 2007
- *GNAMPA, Summer School De Ludo Aleae on probability*, Rome (Italy), September 10-14, 2007
- *Large Scale Stochastic Dynamics*, Oberwolfach (Germany), August 26 - September 1st, 2007
- *Fluctuation and Dissipation Phenomena in Driven Systems far from Equilibrium*, Max Planck Institute for the Physics of Complex Systems, Dresden (Germany), July 16-18, 2007
- *Seminar of probability of Lille 1*, Lille (France), november 2006
- *Workshop "Large Scale Stochastic Dynamics and Interaction with Kinetic Theory"*, Foundation for Research and Technology, Heraklion (Crete) , june 11-15, 2006

- *Homogenization on random media*, CIRM, Luminy (France), july 5-11, 2005
- *Seminar of probability of Roma III*, Roma (Italy), december 10, 2004.
- *Seminar of probability of Roma I*, Roma (Italy), november ,2004.
- *Large Scale dynamics*, Oberwolfach (Germany), august 29 -september 4, 2004.
- *Workshop of Probability in Rouen*, Rouen (France), june 1-3, 2004.
- *Workshop “Systèmes à grand nombre de particules”*, Rennes (France), may 26-28, 2004.
- *Probability seminar of LATP*, Marseille (France), april 2, 2004.
- *Probability seminar of the Ens-lyon*, Lyon (France), june 5, 2003.
- *Stochastic Analysis on Large Scale Interacting Systems*, Kamakura (Japan) jully 17-26, 2002.
- *Workshop of Probability in Rouen*, Rouen (France), june 6-7, 2002.
- *Colloquium Jeunes Probabilistes et Statisticiens*, Aussois (France), april 29-may 3, 2002.

## Invitations

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- *Rome 1 (G. Basile, L. Bertini)*, Rome 1 (Italy), February 20-25, 2017.
- *University of Minho (P. Gonçalves)*, Braga (Portugal), November 28-December 3, 2016.
- *University of Lyon 1 (C. Garban and F. Toninelli)*, Lyon (France), May 17-May 19, 2016.
- *University of Minho (P. Gonçalves)*, Braga (Portugal), December 14-December 19, 2015.
- *Impa (M. Jara, C. Landim, P. Gonçalves)*, Rio de Janeiro (Brazil), August 2014.
- *Galileo Galilei Institute for Theoretical Physics*, Advances in Nonequilibrium Statistical Mechanics, Florence (Italy), May 26-June 6, 2014
- *Institute of Advanced Study (H.T. Yau)*, Princeton (New-Jersey, USA), February 17-28, 2014.
- *University of Minho (P. Gonçalves)*, Braga (Portugal), December 5-14, 2013.
- *Pisa University (F. Flandoli and F. Morandin)*, Pisa (Italy), June 3-7, 2013.
- *Rutgers University (J.L. Lebowitz)*, (New Jersey), March 25-April 6, 2012.
- *Impa (M. Jara)*, Rio de Janeiro (Brazil), February 2012.
- *University of Minho (P. Gonçalves)*, Braga (Portugal), September 26-30, 2011.
- *Rutgers University (J.L. Lebowitz)*, (New Jersey), April 15-May 15, 2010.
- *Fields institute, Thematic Program on Dynamics and Transport in Disordered Systems*, Toronto (Canada), April 4-15, 2010.
- *Rutgers University (J.L. Lebowitz)*, (New Jersey), October 2010.
- *Budapest University of Technology and Economics (J. Fritz and K. Nagy)*, Budapest (Hungary), December 14-18, 2009
- *Impa (C. Landim)*, Rio de Janeiro (Brazil), November 2009
- *Budapest University of Technology and Economics (J. Fritz and K. Nagy)*, Budapest (Hungary), November 25-30, 2007
- *Semester “Stochastic Analysis, Stochastic Partial Differential Equations and Applications to Fluid Dynamics and Particle Systems”*, Centro di Ricerca Matematica Ennio De Giorgi, Pise (Italy), may/june 2006.
- *Roma I La Sapienza (V. Ricci)*, Rome (Italy), june 25-july 1, 2006
- *Roma I La Sapienza (L. Bertini)*, Rome (Italy), winter 2004.
- *Hydrodynamic limits semester*, Henri Poincaré Institute, Paris (France), winter 2001.