Claudio Landim

Education

1982 - 1985	Graduate Studies, Dept. of Mathematics, PUC-Rio.
1985 - 1986	Master, IMPA
1986 - 1990	Ph. D., Université Paris VII
1996 - 1996	Habilitation à Diriger des Recherches, Université de Rouen

Positions

1985 - 1986	Research Assistant, IMPA
1988 - 1990	Allocataire d'Enseignement et de Recherches, U. Rouen
1990 - 2002	Chargé de Recherches, CNRS, UMR 6085
1994 - 2000	Associate Researcher, IMPA
2000 - Present	Researcher, IMPA

Prizes and Distinctions

- Bronze Medal, CNRS, France 1997
- Member of the Brazilian Academy of Sciences since 2000.
- John S. Guggenheim Memorial Foundation Fellow 2004.
- Third World Academy of Sciences Prize in Mathematics 2006

Ph. D. Students

- **Abdelatif Koukkous**, Université de Rouen 1997. Hydrodynamic behavior of symmetric zero-range processes with random rates. Stoch. Proc. Appl. **84**, 297, (1999)
- **Elise Janvresse**, Université de Rouen 1998. First order correction for the hydrodynamic limit of symmetric simple exclusion processes with speed change in dimension $d > 2$. Annals Probab. **26**, 1874–1912, (1998).
- **Gonzalo Panizo**, IMPA 2001. pectral gap and logarithmic Sobolev inequality for unbounded conservative spin systems. Annales de l'Institut Henri Poincaré, Prob. et Stat. **38**, 739-777, (2002).
- **Raquel Mariela Sued**, IMPA 2003. Regularity of the diffusion coefficient of the mean-zero asymmetric simple exclusion process. Ann. Inst. H. Poincar Probab. Statist. **41**, 1–33, (2005). Received the prize "Francisco Aranda Ordaz" given by the Regional Latinoamericana de la Sociedad Bernoulli to the best thesis in probability defedend by a Latin-American between 2001 and 2003.

- **Glauco Valle da Silva Coelho**, IMPA 2003. Evolution of the interface in a two dimensional Potts model. Commun. Math. Phys. **249**, 215–247, (2004).
- **Milton David Jara Valenzuela**, IMPA 2004. Finite dimensional approximations of the diffusion coefficient. Annals Probab. **34**, (2006), Ann. Inst. H. Poincar Probab. Statist. **42**, 567 – 577 (2006).
- **Jeronimo Monteiro Noronha Neto**, IMPA 2004. Poincaré and Logarithmic Sobolev Inequality for Ginzburg-Landau Processes in Random Environment. Probab. Th. Rel. Fields. **131**, 229-260, (2005).
- **Johel Beltrán**, IMPA 2005. Regularity of diffusion coefficient for nearest neighbor asymmetric simple exclusion on **Z**. Stoch. Proc. Appl. **115**, 1451-1474, (2005)
- **Nicolas Lanchier**, Rouen 2005. Systèmes de particules multi colores. Phase transitions and duality properties of a successional model. Adv. Appl. Probab. **37**, 265-278, (2005). Multitype contact process with frozen states: a spatial model of allelopathy. J. Appl. Probab. **42**, 1109-1119 (2006). With Belhadji: Individual versus cluster recoveries within a spatially structured population. Ann. Appl. Probab. **16**, 403-422 (2006). With Neuhauser: Stochastic spatial models of host-pathogen and host-mutualist interactions. Ann. Appl. Probab. **16**, 448-474 (2006).
- **Ana Patrícia Carvalho Gonçalves**, IMPA 2007. Central limit theorem for a tagged particle in the asymmetric simple exclusion process. To appear in Stoch. Proc. Appl.

Administrative Charges

- Vice-president of the Brazilian Mathematical Society 1999–2000.
- Member of the Administration Council of IMPA 2000 – 2006
- Chair of the Master in Finance of IMPA 2000 – 2003
- Member of the Committee for Conferences on Stochastic Processes of the Bernoulli Society 2003 – present
- Chair of the Teaching Department, IMPA, 2004 – 2008
- Vice Director, IMPA, 2008 – present

Editorial Activities

- Editor of Revista Matemática Universitária 1999–2001
- Associate editor of Stochastic Processes and their Applications 1999–2006.
- Associate editor of Journal of Statistical Physics 2000–2002.
- Associate editor of Annales de la Faculté des Sciences de Toulouse. 2003 – 2006
- Editor of ALEA 2005 – present.

Conference Organization

- 3rd Brazilian School of Probability, Mambucaba, 1998.
- 23th Colóquio Brasileiro de Matemática, IMPA, 2001.
- 29th Conference on Stochastic Processes and their Applications and 7th Brazilian School of Probability. Angra dos Reis, 2003.
- 24th Colóquio Brasileiro de Matemática, IMPA, 2003.
- Large scale dynamics, August 29 - September 4, 2004 Oberwolfach, Germany.
- Large scale behaviour of interacting particles systems: fluctuations and hydrodynamics, 22-26 August 2005, Budapest, Hungary.
- Large scale stochastic dynamics and interaction with kinetic theory, June 11-15 2006, Heraklion, Greece.
- Large scale dynamics, August 26 - September 1, 2007, Oberwolfach, Germany.

Publications

1. C. Landim; Hydrodynamical Equation for Attractive Particle Systems on $\mathbb{Z}^d$. The Annals of Probability **19**, 1537-1558, (1991).

2. C. Landim; Hydrodynamical limit for Attractive Particle Systems on $\mathbb{Z}^d$, Annales de l'Institut Henri Poincaré, Probabilités et Statistiques, **27**, 559-581, (1991).
3. C. Landim; An overview on large deviations of interacting particle systems. Annales de l'Institut Henri Poincaré, Physique Théorique, **55**, 615-635, (1991).
4. C. Landim; Occupation Time Large Deviations of the Symmetric Simple Exclusion Process. The Annals of Probability **20**, 206-231, (1992).

5. C. Landim; Large fluctuations for Markov processes: an application in interacting particles systems. En "Probabilistic Methods in Mathematical Physics", édité par F. Guerra, M. I. Loffredo et C. Marchioro, World Scientific, (1992).

6. G. Jona-Lasinio, C. Landim, M. E. Vares; Large deviations for a reaction-diffusion model, Probability Theory and Related Fields **97**, 339–361, (1993).

7. C. Landim; Conservation of local equilibrium of attractive particle systems on $\mathbb{Z}^d$, The Annals of Probability **21**, 1782–1808, (1993).

8. C. Landim; Hydrodynamical limit for mean zero asymmetric zero range processes. En "Cellular Automata and Cooperative Systems", édité par N. Boccara, E. Goles, S. Martinez et P. Picco. Kluwer Academic Publishers (1993).

9. P. A. Ferrari, J. A. Galves, C. Landim; Exponential waiting time for a big gap in a one dimensional zero range process,The Annals of Probability, **22**, 284–288, (1994).

10. C. Landim, M. E. Vares; Equilibrium fluctuation for exclusion process with speed change, Stochastic Processes and their Applications **52**, 107–118, (1994).

11. C. Kipnis, C. Landim, S. Olla; Hydrodynamical limit for a nongradient model: the generalized exclusion process. Communications on Pure and Applied Mathematics **47**, 1475–1545, (1994).

12. O. Benois, C. Kipnis, C. Landim; Large deviations from the hydrodynmical limit for mean zero asymmetric zero range processes. Stochastic Processes and their Applications **55**, 65–89, (1995).

13. C. Landim, H. T. Yau; Large deviations for interacting particle systems in infinite volume. Communications on Pure and Applied Mathematics **48**, 339-379, (1995).

14. C. Kipnis, C. Landim, S. Olla; Macroscopic properties of a stationary non–equilibrium distribution for a non–gradient interacting particle system. Annales de l'Institut Henri Poincaré, série B, **31**, 191–221, (1995).

15. C. Landim; Hydrodynamical limit for space inhomogeneous one dimensional totally asymmetric zero range processes. The Annals of Probability **24**, 599–638, (1996).

16. I. Benjamini, P. A. Ferrari, C. Landim; Asymmetric processes with random rate. Stochastic Processes and their Applications **61**, 181–204, (1996).

17. C. Landim, M. E. Vares; Exponential estimate for reaction–diffusion models. Probability Theory and Related Fields **106**, 151–186, (1996).

18. C. Landim, S. Olla, H. T. Yau; Some properties of the diffusion coefficient for asymmetric simple exclusion processes. The Annals of Probability **24**, 1779–1807, (1996).

19. D. Gabrielli, G. Jona–Lasinio, C. Landim; Onsager reciprocity relations without microscopic reversibility. Physical Review Letters **77**, 1202–1205, (1996).

20. C. Landim, S. Sethuraman, S. R. S. Varadhan; Spectral gap for zero range dynamics.The Annals of Probability **24**, 1871–1902, (1996).

21. C. Landim, S. Olla, H. T. Yau; First order correction for the hydrodynamic limit of asymmetric simple exclusion processes in dimension $d \geq 3$. Communications on Pure and Applied Mathematics **50**, 149–203, (1997).

22. C. Landim, M. Mourragui; Hydrodynamic limit of mean zero asymmetric zero range processes in infinite volume. Annales de l'Institut H. Poincaré, Prob. et Stat., **33**, 65–82, (1997).

23. D. Gabrielli, G. Jona–Lasinio, C. Landim, M. E. Vares; Microscopic reversibility and thermodynamic fluctuations. In "Boltzmann's Legacy 150 years after his birth" Roma, 1994, Atti dei Convegni Licei **131** 79–88 , Accademia Nazionale dei Lincei, Roma, (1997)

24. C. Landim, H. T. Yau; Fluctuation–dissipation equation of asymmetric simple exclusion processes. Probability Theory and Related Fields **108**, 321–356, (1997).

25. L. Bertini, C. Landim, S. Olla; Derivation of Cahn–Hilliard equations from Ginzburg–Landau models. Journal of Statistical Physics **88** 365–381, (1997).

26. O. Benois, A. Koukkous, C. Landim; Diffusive behaviour of asymmetric zero range processes. Journal of Statistical Physics **87**, 577–591, (1997).

27. C. Landim, S. Olla, S. Volchan; Driven Tracer Particle and Einstein Relation in One Dimensional Symmetric Simple Exclusion Process. Resenhas do IME-USP **3**, 173–209, (1997).

28. C. Landim, S. Olla, H. T. Yau; Convection–Diffusion equation with space–time ergodic random flow. Probability Theory and Related Fields **112**, 203–220, (1998).
29. Landim C., Olla S., Volchan S.; Driven tracer particle in one dimensional symmetric simple exclusion process nearest neighbor symmetric simple exclusion process. Communications in Mathematical Physics **192**, 287–307, (1998).
30. S. Carmona, C. Landim, A. Lopes, S. Lopes; A level 1 large deviations principle for the autocovariances of uniquely ergodic transformations with noise. Journal of Statisitcal Physics **91**, 395–421, (1998).
31. G. Gielis, A. Koukkous, C. Landim; Equilibrium fluctuations for zero range processes in random environment. Stochastic Processes and their Applications **77**, 187–205, (1998).
32. E. Janvresse, J. Quastel, C. Landim, H. T. Yau; Relaxation to equilibrium of conservative dynamics I : zero range processes. The Annals of Probability **27**, 325–360, (1999).
33. C. Landim; Decay to equilibrium in L^∞ of asymmetric simple exclusion processes in infinite volume. Markov Processes and Related Fields **4**, 517–534, (1998).
34. D. Gabrielli, G. Jona–Lasinio, C. Landim; Onsager symmetry from microscopic TP invariance, Journal of Statistical Physics **96**, 639–652, (1999).
35. C. Landim, M. Mourragui, S. Sellami; Hydrodynamic limit of nongradient systems in contact with stochastic reservoirs, Teoriya Veroyatnostei i ee Primeneniya **45**, 694–717, (2000) and Theory of Probability and Its Applications. **45**, 604–623, (2001).
36. C. Landim, S. Volchan; Equilibrium fluctuation of a driven tracer particle dynamics, Stochastic Processes and their Applications **85**, 139–158, (2000).
37. P. A. Ferrari, A. Galves, C. Landim; Convergence to equilibrium of the symmetric simple exclusion process. Markov Processes and their Applications **6**, 73–88, (2000).
38. E. Andjel, P. A. Ferrari, H. Guiol, C. Landim; Convergence to the maximal invariant measure in zero range process with random rates. Stochastic Processes and their Applications **90**, 67–81, (2000).
39. C. C. Chang, C. Landim, S. Olla; Equilibrium fluctuations of asymmetric exclusion processes in dimension $d \geq 3$. Probability Theory and Related Fields **119**, 381–409, (2001).

40. C. Landim, S. Olla, S. R. S. Varadhan; Finite-dimensional approximation of the self-diffusion coefficient for the exclusion process, The Annals of Probability **30**, 483–508, (2002).

41. C. Landim, G. Panizo, H. T. Yau; Spectral gap and logarithmic Sobolev inequality for unbounded conservative spin systems. Annales de l'Institut Henri Poincaré, Prob. et Stat. **38**, 739-777, (2002).

42. C. Landim, H. T. Yau; Convergence to equilibrium of conservative particle systems on $\mathbb{Z}^d$. The Annals of Probability **31**, 115-147, (2003).

43. C. Landim, S. Olla, S. R. S. Varadhan; Symmetric simple exclusion process: regularity of the self diffusion coefficient. Communications in Mathematical Physics **224**, 307–321, (2001).

44. L. Bertini, A. De Sole, D. Gabrielli, G. Jona-Lasinio, C. Landim; Fluctuations in Stationary Nonequilibrium States. Physical Review Letters **87**, 040601, (2001).

45. C. Landim, S. Olla, Varadhan S. R. S.; Asymptotic behavior of a tagged particle in simple exclusion processes. Boletim da Sociedade Brasileira de Matemática, **31**, 241–275, (2001).

46. L. Bertini, A. De Sole, D. Gabrielli, G. Jona-Lasinio, C. Landim; Macroscopic fluctuation theory for stationary nonequilibrium states. Journal of Statisitical Physics **107**, 635-675, (2002),

47. Chang C. C., Landim C., Lee T. Y., Occupation time large deviations of two dimensional symmetric simple exclusion process. Annals of Probability **32**, 661-691, (2004).

48. Landim C., Quastel J., Salmhofer M., Yau H. T., Supperdiffusive behavior of one dimensional asymmetric exclusion process. Commun. Math. Phys. **244**, 455-481, (2003)

49. C. Landim, S. Olla, S. R. S. Varadhan; On viscosity and fluctuation–dissipation in exclusion processes. Journal of Statistical Physics **115**, 323-363, (2004)

50. P. A. Ferrari, C Landim and H. Thorisson; Poisson trees, succession lines and coalescing random walks. Annales de l'Institut Henri Poincaré, Prob. et Stat. **40**, 141-152, (2004)

51. L. Bertini, A. De Sole, D. Gabrielli, G. Jona-Lasinio, C. Landim; Large deviations for the boundary driven symmetric simple exclusion process. Math. Phys. Anal. Geom. **6**, 231-267, (2003).

52. C. Landim, S. Olla, S. R. S. Varadhan; Diffusive behaviour of the equilibrium fluctuations in the asymmetric exclusion processes. Advanced Studies in Pure Mathematics **39**, 307-324, (2004).
53. C. Landim, J. Monteiro; Poincaré and Logarithmic Sobolev Inequality for Ginzburg-Landau Processes in Random Environment. Probab. Th. Rel. Fields. **131**, 229-260, (2005).
54. C. Landim, R. M. Sued, G. Valle; Hydrodynamic limit of asymmetric exclusion processes under diffusive scaling in $d \geq 3$. Commun. Math. Phys. **249**, 215–247, (2004).
55. L. Bertini, A. De Sole, D. Gabrielli, G. Jona-Lasinio, C. Landim; Minimum dissipation principle in stationary non equilibrium states. J. Stat. Phys. **116**, 831–841 (2004).
56. C. Landim; Gaussian estimates for symmetric simple exclusion processes. Ann. Fac. Sciences Toulouse **14**, 683–703 (2005).
57. C. Landim, J. A. Ramírez, H. T. Yau; Superdiffusivity of two dimensional lattice gas models. J. Stat. Phys. **119**, 963 – 995 (2005).
58. M. Jara, C. Landim; Nonequilibrium central limit theorem for a tagged particle in symmetric simple exclusion. Annales de l'Institut Henri Poincaré, Prob. et Stat. **42**, 567 – 577 (2006).
59. L. Bertini, A. De Sole, D. Gabrielli, G. Jona-Lasinio, C. Landim; Macroscopic current fluctuations in stochastic lattice gases. Phys. Rev. Lett. **94**, 030601, (2005).
60. B. Derrida, C. Enaud, C. Landim, S. Olla; Fluctuations in the weakly asymmetric exclusion process with open boundary conditions. J. Stat. Phys. **118**, 795 – 811 (2005).
61. C. Landim, G. Valle; A microscopic model for Stefan's melting and freezing problem. Ann. Probab. **34**, 779-803 (2006).
62. C. Landim; Interacting particle systems and hydrodynamic equations; Encyclopedia of Mathematical Physics, Kluwer, (2006).
63. L. Bertini, A. De Sole, D. Gabrielli, G. Jona-Lasinio, C. Landim; Non equilibrium current fluctuations in stochastic lattice gases. J. Stat. Phys. **123**, 237 – 276 (2006).
64. M. Jara, C. Landim; Quenched nonequilibrium central limit theorem for a tagged particle in the exclusion process with bond disorder. Ann. Inst. H. Poincaré, Probab. Statist. **44**, 341–361 (2008).

65. L. Bertini, A. De Sole, D. Gabrielli, G. Jona-Lasinio, C. Landim; Large deviations of the empirical current in interacting particle systems. Theory Probab. Appl. **51**, 2–27 (2007).
66. L. Bertini, A. De Sole, D. Gabrielli, G. Jona-Lasinio, C. Landim; Large deviation approach to non equilibrium processes in stochastic lattice gases. Bol. Soc. Brasil. Mat. (N.S.) **37**, 611 — 643 (2006).
67. C. Landim, A. Milanes, S. Olla; Stationary and nonequilibrium fluctuations in boundary driven exclusion processes. To appear in Markov Processes Related Fields (2007).
68. J. Beltrán, C. Landim; A lattice gas model for the incompressible Navier-Stokes equation. To appear in Ann. Inst. H. Poincaré, Probab. Stat. (2007).
69. P. A. Ferrari, C. Landim, V. V. Sisko; Condensation for a fixed number of independent random variables. J. Stat. Phys. **128**, 1153 – 1158 (2007).
70. M. Jara, C. Landim, S. Sethuraman; Nonequilibrium fluctuations for a tagged particle in mean-zero one-dimensional zero-range processes. preprint (2007).
71. L. Bertini, A. De Sole, D. Gabrielli, G. Jona-Lasinio, C. Landim; Stochastic interacting particle systems out of equilibrium. J. Stat. Mech. (2007) P07014 http://www.iop.org/EJ/abstract/1742-5468/2007/07/P07014
72. P. Gonçalves, C. Landim, C. Toninelli; Hydrodynamic Limit for a Particle System with degenerate rates. preprint (2007).
73. L. Bertini, A. De Sole, D. Gabrielli, G. Jona-Lasinio, C. Landim; On the long range correlations of thermodynamic systems out of equilibrium. preprint (2007).
74. A. Faggionato, M. Jara, C. Landim; Hydrodynamic behavior of one dimensional subdiffusive exclusion processes with random conductances. To appear in Probab. Th. Rel. Fields (2007).
75. J. Beltrán, C. Landim; Meta-stability and condensed zero-range processes on finite sets. preprint (2008).
76. L. Bertini, C. Landim, M. Mourragui; Dynamical large deviations for the boundary driven weakly asymmetric exclusion process. preprint (2008).
77. L. Bertini, D. Gabrielli, C. Landim; Large deviations for the boundary driven weakly asymmetric exclusion process. preprint (2008).

Books

1. C. Landim; *Otimização Estocástica*. 18 Coloquio Brasileiro de Matemática, (1991).
2. C. Kipnis, C. Landim; *Scaling Limits of Interacting Particle Systems*, Grundlheren der mathematischen Wissenschaften **320**, Springer-Verlag, Berlin, New York, (1999).
3. C. Landim; *Hydrodynamic Limits of Interacting Particle Systems*. ICTP Lecture Notes **17**, School and Conference on Probability Theory, 57-100, Abdus Salam International Centre for Theoretical Physics (2004).
4. C. Landim; *Central Limit Theorem for Markov Processes*, From Classical to Modern Probability CIMPA Summer School 2001, Picco, Pierre; San Martin, Jaime (Eds.), Progress in Probability **54**, 147–207, Birkhaüser, 2003.