

STEFANO OLLA - PUBLICATIONS LIST

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- Books



- (1) *Fluctuations in Markov Processes, martingale approximation and time symmetry*, with T. Komorowski and C. Landim, **Grundlehren der mathematischen Wissenschaften** **345**, Springer, August 31, 2012.

- Publications in international journals:

- (1) A. Dembo, M. Jara, S. Olla, *The Infinite Atlas Process: convergence to equilibrium*, arXiv:1709.04085 [math.PR]. Accepted for the publication in **Ann.Inst. H. Poincaré, Probabilités et Statistiques**.
- (2) T. Komorowski, S. Olla, M. Simon, *Macroscopic evolution of mechanical and thermal energy in a harmonic chain with random flip of velocities*. (2016) arxiv.org/abs/1609.02413v1. Accepted for the publication in **Kinetic and Related Models**.
- (3) *Ensemble dependence of fluctuations*, with N. Cancrini, **J. Stat.Phys.**, **168**, N. 4, 707–730 (2017), DOI 10.1007/s10955-017-1830-y.
- (4) *Convergence rates for nonequilibrium Langevin dynamics*, with A. Iacobucci, G. Stoltz, **G. Ann. Math. Québec** (2017), <https://doi.org/10.1007/s40316-017-0091-0>, arxiv.org/abs/1702.03685.
- (5) *Diffusive propagation of energy in a non-acoustic chain*, with T. Komorowski, **Arch.Ration.Mech.Anal.**, **223**, N.1, 95-139 (2017), doi:10.1007/s00205-016-1032-9.
- (6) F. Legoll, T. Lelièvre, S. Olla, *Pathwise estimates for an effective dynamics*, **Stoch. Proc. and Appl.**, 127 (2017) pp. 2841-2863, DOI: 10.1016/j.spa.2017.01.001
- (7) *Non-equilibrium isothermal transformations in a temperature gradient from a microscopic dynamics*, (2015), with V. Letizia, **Annals of Probability**, Volume 45, Number 6A (2017), 3987-4018. doi:10.1214/16-AOP1156.
- (8) *Ballistic and superdiffusive scales in macroscopic evolution of a chain of oscillators*, with T. Komorowski, **Nonlinearity**, **29**, N.3, 962, (2016), <https://doi.org/10.1088/0951-7715/29/3/962>.
- (9) *Quasi-static Hydrodynamic limits*, with A. De Masi, **J. Stat Phys.**, **161**:1037–1058, (2015) DOI 10.1007/s10955-015-1383-x.
- (10) *Superdiffusion of Energy in a system of harmonic oscillators with noise*, with M. Jara and T. Komorowski, **Commun. Math. Phys.**, **339**, 407–453 (2015), DOI 10.1007/s00220-015-2417-6
- (11) *Microscopic derivation of an adiabatic thermodynamic transformation*, with M. Simon, arxiv.org/abs/1409.6424, **Braz. J. Probab. Stat.**, **29**, (2015), no. 2, 540–564. doi:10.1214/14-BJPS275. <http://projecteuclid.org/euclid.bjps/1429105601>.

- (12) *Green–Kubo Formula for weakly coupled System with dynamical noise*, with C. Bernardin, F. Huveneers, J.L. Lebowitz, C. Liverani, **Comm. Math. Phys.**, **334**, n.3, 1377–1412, March 2015. DOI 10.1007/s00220-014-2206-7.
- (13) *Hydrodynamic Limit for an Hamiltonian System with Boundary Conditions and Conservative Noise*, with N. Even, **Arch.Rat.Mech.Appl.**, 213 (2014) 561-585, DOI 10.1007/s00205-014-0741-1
- (14) *Microscopic Derivation of an Isothermal Thermodynamic Transformation*, From Particle Systems to Partial Differential Equations, C. Bernardin and P. Goncalves (eds.), Springer Proceedings in Mathematics and Statistics **75**, Springer-Verlag Berlin Heidelberg, (2014). DOI 10.1007/978-3-642-54271-8,
- (15) *Energy Diffusion in Harmonic System with Conservative Noise*, with G. Basile, **J.Stat.Phys**, **155**, 6, 1126-1142, (2014). DOI 10.1007/s10955-013-0908-4
- (16) *Asymptotics of the solutions of the stochastic lattice wave equation*, with Tomasz Komorowski and Lenya Ryznik, **Arch.Rat.Mech.Appl.**, **209**, 455-494, (2013). DOI 10.1007/s00205-013-0626-8
- (17) *Energy Diffusion in anharmonic chain with conservative noise*, with M. Sasada, **Prob.Th.Rel.Fields**, **157**, 721–775 (2013), DOI 10.1007/s00440-012-0469-5.
- (18) *Effective velocity and Einstein relation for a random walk in a Galton-Watson random tree*, with G. Benarous, Y. Hu, O. Zeitouni, **Ann.Inst.H.Poincaré, Prob. and Stat.**, **49**, N. 3, 698-721, 2013.
- (19) *Toward the Fourier law for a weakly interacting anharmonic crystal*, with C. Liverani, **J.American Math.Soc.** 25, N.2, 555-583, 2012.
- (20) *Transport Properties of a Chain of Anharmonic Oscillators with random flip of velocities*, with C. Bernardin, **J. Stat. Phys.** 145, 1224-1255, 2011.
- (21) *Negative Thermal Conductivity in Rotor model*, with A. Iacobucci, F. Legoll, G. Stoltz, **Phys. Rev. E** 84, 061108, 2011.
- (22) *Thermal Conductivity of the Toda Lattice with Conservative Noise*, with A. Iacobucci, F. Legoll, G. Stoltz, **J. Stat. Phys.**, 140, 2, 2010, 336-348. DOI 10.1007/s10955-010-9996-6
- (23) *A limit theorem for an additive functionals of Markov chains*, with M. Jara and T. Komorowski, **Annals of Applied Probability**, Vol. 19, No. 6, 2270-2300, 2009. DOI: 10.1214/09-AAP610
- (24) *Energy transport in stochastically perturbed lattice dynamics*, with G. Basile and H. Spohn, **Arch. Rat. Mech.**, Vol. 195, no. 1, 171-203, 2009. DOI 10.1007/s00205-008-0205-6.
- (25) *Heat Conduction and Entropy Production in Anharmonic Crystals with Self-Consistent Stochastic Reservoirs*, with F. Bonetto, J. L. Lebowitz and J. Lukkarinen, **J. Stat. Phys**, 134, vol.5, 2009, 1097–1119, DOI 10.1007/s10955-008-9657-1.

- (26) *Thermal conductivity for a momentum conserving model*, with G. Basile and C. Bernardin, **Comm.Math.Phys.**, 287, 1, 67-98, 2009.
- (27) *Stationary and Non-equilibrium Fluctuations in Boundary Driven exclusion processes*, with C. Landim and A. Milanes, **Markov Proc. Rel. Fields**, vol. 14, 165-184, 2008.
- (28) *Anomalous transport and relaxation in classical one-dimensional models*, with G. Basile, L. Delfini, S. Lepri, R. Livi, A. Politi, **European Journal of Physics Special Topics**, vol.151, n.1, 85–93 (2007).
- (29) *Momentum conserving model with anomalous thermal conductivity in low dimensional systems*, with G. Basile and C. Bernardin, **Phys. Rev. Lett.** 96, 204303, 2006.
- (30) *Equilibrium Fluctuations for a System of harmonic oscillators with conservative noise*, with J. Fritz and K. Nagy. **J. Stat. Phys.**, vol. 122, no.3, 399-415, 2006.
- (31) *Fourier law and fluctuations for a microscopic model of heat conduction*, with C. Bernardin. **J. Stat. Phys.**, vol.118, nos.3/4, 271-289, 2005.
- (32) *Einstein Relation for Random Walks in random environment*, with T. Komorowski. **Stoch. Proc. and Appl.**, vol. 115, 1279-1301, 2005.
- (33) *Fluctuation in the weakly asymmetric simple exclusion with open boundaries*, with B.Derrida, C. Enaud, C. Landim, **J. Stat. Phys.**, vol. 118, nos. 5/6, 795-811, 2005.
- (34) *Diffusive Behaviour of the Equilibrium Fluctuations in the Asymmetric Exclusion Processes*. with C.Landim and S.R.S.Varadhan, **Advanced Studies in Pure Mathematics**, vol. 39, *Stochastic Analysis on large Scale Interacting Systems*, 307-324, 2004.
- (35) *On Mobility and Einstein Relation for Tracers in Time Mixing random Environments* , with T. Komorowski, **J. Stat. Phys.**, Vol. 118, N. 3/4, 407-435, February 2005.
- (36) *On the viscosity and fluctuation-dissipation in exclusion processes*. with C.Landim and S.R.S.Varadhan, **J. Stat. Phys.**, vol.115, N.1/2, 323-363 (Avril 2004).
- (37) *Homogenization of a bond diffusion in a locally ergodic random environment*, with P. Siri, **Stochastic Processus and Application**, vol.109, 317-326, 2004.
- (38) *Equilibrium Fluctuations for Interacting Ornstein–Uhlenbeck particles*, with C. Tremoulet, **Commun. Math. Phys.**, vol. 233, 463-491, 2003.
- (39) *A note on the central limit theorem for two-fold stochastic random walks in a random environment*, with T. Komorowski, **Bull. Pol. Acad. Sci.**, vol 51 (2), 2003.
- (40) *On the Sector Condition and Homogenization of Diffusions with a Gaussian Drift*, with T. Komorowski, **J. Funct. Anal.**, vol. 197, no.1, 179-211, 2003.
- (41) *Invariant measures for passive tracer dynamics in Ornstein-Uhlenbeck flows*, with Tomasz Komorowski **Stochastic Processes and Applications**, vol. 105, n.1, 139-173, 2003.
- (42) *On the Superdiffusive Behavior of Passive Tracer with a Gaussian Drift*. with T. Komorowski, **J. Stat. Phys.**, vol. 108, Nos. 3/4, 647-668, 2002.

- (43) *Finite-Dimensional Approximation of the Self-Diffusion coefficient for the Exclusion Process.* with C.Landim and S.R.S.Varadhan, **Annals of Prob.** vol. 30, No. 2, 1-26, 2002.
- (44) *Symmetric Simple Exclusion: Regularity of the Self-Diffusion coefficient.* with C.Landim and S.R.S.Varadhan, **Comm.Math.Phys.**, vol. 224, 302-321, 2001.
- (45) *Fluctuation for Weakly Massive $\nabla\phi$ Interface Model and Applications to the Interface on a Wall.* with T.Funaki, **Stochastic Processes and Applications**, Vol. 94, 1-27, 2001.
- (46) *Diffusive Behavior of Interacting Particle Systems, Monte Carlo Methods and Applications* Vol. 7, No. 3-4, pp. 329-338, 2001.
- (47) *On Homogenization of Time Dependent Random Flows.* with T. Komorowski, **Probability Theory and Related Fields**, vol. 121, 98-116, 2001.
- (48) *Equilibrium Fluctuation of Asymmetric Simple Exclusion processes in Dimension $d \geq 3$,* with C.C. Chang and C. Landim, **Probability Theory and Related Fields**, Vol. 119, 381-409, 2001.
- (49) *Equilibrium Fluctuation for a Ginzburg-Landau Interface Model,* with G.B. Giacomin and H. Spohn, **Annals of Probability**, Vol. 29, No. 3, 1138-1172, 2001.
- (50) *Asymptotic Behaviour of a Tagged Particle in Simple Exclusion Processes* with C.Landim and S.R.S.Varadhan, **Bol. Soc. Bras. Mat.** vol. 31, No.3, 241-275, 2000.
- (51) *Driven Tracer Particle in One-Dimensional Symmetric Simple Exclusion,* with C. Landim and S.B. Volchan, **Comm.Math.Phys.**, vol.192, 287-307, 1998.
- (52) *Homogenization of Convection-Diffusion Equation with Space-Time Ergodic Random Flow.,* with C. Landim and H.T. Yau, **Probability Theory and Related Fields**, vol.112, 203-220, 1998.
- (53) *Microscopic derivation of the Cahn-Hilliard equations,* with L.Bertini and C. Landim, **J.Stat.Physics**, vol.88, Nos.1/2, 365-381, 1997.
- (54) *Reversibility in Infinite Hamiltonian Systems with Conservative Noise,* with J. Fritz and C. Liverani, **Comm.Math.Phys.**, vol.189, 481-496, 1997.
- (55) *Some properties of the diffusion coefficient for the Asymmetric Simple Exclusion Processes,* with C. Landim and H.T. Yau, **Annals of Probability**, vol.24, n.4, 1779-1808, 1997.
- (56) *First Order Correction for the Hydrodynamic Limit of Asymmetric Simple Exclusion Processes in dimension $d \geq 3$,* with C. Landim and H.T. Yau, **Comm.Pure Appl.Math**, vol.50, n.2, 149-203, 1997.
- (57) *Ergodicity of Infinite Hamiltonian Systems with Conservative Noise,* with C. Liverani, **Probability Theory and Related Fields**, n.106, 401-445, 1996.

- (58) *Macroscopic Properties of a Stationary Non-Equilibrium Distribution for a Non-Gradient Interacting Particles System*, with C. Kipnis and C. Landim, **Ann. Inst. H. Poincaré, probabilités and statistiques**, vol. 31, n.1, 191-221, 1995.
- (59) *Hydrodynamic Limit for a Non-Gradient System: the Generalised Symmetric Exclusion Process*, with C. Kipnis and C. Landim, **Comm. Pure Appl. Math.**, vol. 47, n.11, 1475-1545, 1994.
- (60) *Hydrodynamic Limit for a Hamiltonian System with Weak Noise* with H. T. Yau and S.R.S. Varadhan, **Comm. Math. Phys.** **155**, 523-560, 1993.
- (61) *Scaling Limits for Interacting Ornstein-Uhlenbeck Processes*, with S.R.S. Varadhan, **Comm. Math. Phys.** **135**, 335-378, 1991.
- (62) *Large Deviations from the Hydrodynamic Limit for a System of Independent Brownian Particles*, with C. Kipnis, **Stochastics and Stochastic Reports** **33**, 17-25, 1990.
- (63) *Hydrodynamics and Large Deviations for Exclusion Processes*, with C. Kipnis and S.R.S. Varadhan, **Comm. Pure Appl. Math.** **42**, 115-137, 1989.
- (64) *Large Deviations for Gibbs Random Fields*, **Probability Theory and Related Fields** **77**, 343-357, 1987.
- (65) *Large Deviations for Almost Markovian Processes*, **Probability Theory and Related Fields** **76**, No.3, 395-409, 1987.
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 - (1) *Driven Tracer and Einstein Relation in One-Dimensional Symmetric Simple Exclusion*, with C. Landim and S.B. Volchan, **Resenhas do Instituto de Matematica e Estatistica da Universidade de Sao Paulo**, vol.3, N.2, 173-209, 1997.
 - (2) *Large Deviation for Stationary Processes*, with L. Accardi, **Milan Journal of Mathematics** **57**, N.1, 381-433, 1987.
 - Proceedings of conferences
 - (1) *Heat Equation from Microscopic Dynamics: a weak coupling Approach*, with C. Liverani, Proceedings of the **International Conference of Mathematical-Physics**, Prague 2009.
 - (2) *Energy Diffusion and Superdiffusion in Oscillators Lattice network*, in *New Trends in Mathematical Physics*, V. Sidoravicious ed., Springer 2009. <http://fr.arxiv.org/abs/0809.1496>, Proceedings of the **International Conference of Mathematical-Physics**, Rio de Janeiro 2006.
 - (3) *Hydrodynamic Limits and Ergodicity for Hamiltonian Systems with small noise*, in "Cellular Automata and Cooperative Systems", Boccara and al. editors, Nato Asi series, Kluwer Academic Pub., 1993.
 - (4) *On the Polaron Asymptotics at Finite Couplings Constant*, with L. Accardi, in Quantum Probability and Applications II, **Lecture Notes in Mathematics** **1136**, Springer (1985).

- Chapters in Books:

- (1) G. Basile, C. Bernardin, M. Jara, T. Komorowski, S. Olla, *Thermal conductivity in harmonic lattices with random collisions*, in “Thermal transport in low dimensions: from statistical physics to nanoscale heat transfer”, S. Lepri ed., **Lecture Notes in Physics 921**, chapter 5, Springer 2016. DOI 10.10007/978-3-319-29261-8-5. <http://arxiv.org/abs/1509.02474>

- Other publications:

- (1) *Entropy Methods for the Boltzmann Equation, Foreword*, with F. Golse, **Lect. Notes in Math. 1916**, v-x, Springer 2008.
- (2) *Central Limit Theorems for Tagged Particles and for Diffusion in Random Environment*. Notes du cours donné à *Etats de la recherche: Milieux Aléatoires*, 23-25 Novembre 2000, **Panorama and Synthèses 12**, 2001.
- (3) *Lectures on Homogenization of Diffusion Processes in Random Fields*, publications de l’Ecole Doctorale de l’Ecole Polytechnique, 1994.
- (4) *Large Deviation Problems in Statistical Mechanics*, Ph.D. Dissertation, Rutgers University, octobre 1987.
- (5) *Nonequilibrium stationary state for a damped rotator*, with G. Gallavotti and A. Iacubucci, 2013, arxiv.org/abs/1310.5379v1

- Submitted Preprints

- (1) Li-Cheng Tsai, S. Olla, *Exceedingly Large Deviations for the TASEP*, (2017) [arXiv:1708.07052](https://arxiv.org/abs/1708.07052).
- (2) C. Bernardin, F. Huveneers, S. Olla, *Hydrodynamic Limits for the Disordered Harmonic Chain*. [arXiv:1710.08848](https://arxiv.org/abs/1710.08848) [math.PR].
- (3) S. Marchesani, S. Olla *Hydrodynamic Limit for a Hamiltonian System in Shock Regime under Boundary Tension*, arxiv.org/abs/1802.01965 .

- In preparation

- (1) A. De Masi, S. Olla, *Quasi Static Large deviations*.
- (2) P. D. Hislop, K. Kirkpatrick, J. Schenker, S. Olla, *Transport of a Quantum Particle in a time-dependent white noise Potential*.
- (3) G. Basile, T. Komorowski, S. Olla, *Diffusive limits with thermal boundary conditions*.
- (4) T. Komorowski, S. Olla, L. Ryzhyk, H Spohn *Kinetic limit for a harmonic lattice with thermal boundary*.
- (5) G. Basile, T. Komorowski, S. Olla, *Superconductivity of a Non-equilibrium stationary state*.
- (6) T. Komorowski, S. Olla, M. Simon, *Non-equilibrium stationary profile of temperatures in a chain with random velocity flip*.
- (7) *Macroscopic diffusion in the energy Ginzburg-Landau model*, with C. Liverani and M.Sasada.
- (8) T. Komorowski, S. Olla, *Superdiffusion of energy in 2-dimensional chains with conservative noise*.
- (9) *Non-equilibrium Macroscopic Dynamics of Chains of Anharmonic Oscillators*, with C. Bernardin, monographie.