

GATIEN VERLEY

Lecturer in physics
38 years old (16/08/1985), French nationality
Married, two children
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EDUCATION AND PROFESSIONAL EXPERIENCES

- Since 2014 **Lecturer**, IJClab, Irène Joliot Curie Laboratory of Physics of the two infinities (UMR 9012), Orsay
Paris Saclay University
- 2012–2014 **Post-Doc**, Physics and Material Sciences Research Unit
Luxembourg University
Advisor : Massimiliano Esposito
Project : Non-equilibrium fluctuations : small systems and critical systems
- 2009–2012 **PhD in Physics**, www.theses.fr
École Supérieure de Physique et de Chimie Industrielles (E.S.P.C.I.), Paris, France.
Theoretical physics and chemistry Laboratory (P.C.T., U.M.R. Gulliver 7083).
PhD advisor : David Lacoste.
Project : Fluctuations and response of non-equilibrium systems.
- 2008–2009 **Master 2 in quantum physics**, Fundamental Concepts in Physics (C.F.P.)
Université Pierre et Marie Curie (U.P.M.C.), Paris, France.
Internship advisor (3 months) : Nicolas Treps.
Laboratoire Kastler Brossel (L.K.B.).
Project : frequency comb and quantum metrology, optical parametric oscillator and measures beyond standard quantum limit.
- 2007–2008 **Master 1 in fundamental physics**
Université Pierre et Marie Curie (U.P.M.C.), Paris, France.
Internship advisor (1 mois) : Michel Talon.
High Energy and Theoretical Physics Laboratory (L.P.T.H.E.).
Project : Study of the analogy between path integral and classical optics.
- 2006–2007 **Licence 3 in fundamental physics**
Université Pierre et Marie Curie (U.P.M.C.), Paris, France.
Internship advisor (2 weeks) : Ludovic Pricoupenko.
Condensed Matter Theoretical Physics Laboratory (L.P.T.M.C.).
Project : Three-body problem in quantum mechanics for short range interaction potentials
- 2005–2006 **Licence 3 in Mathematics**
Science and technology university of Lille (U.S.T.L.), France.
Licence and first year of engineering school the same year.
- 2003–2006 **Preparatory class and first year of engineering school**
Numerics and electronics superior institute (I.S.E.N.), Lille, France.
- 2002–2003 **Scientific Baccalauréat**
Free education institute of Marcq-en-Baroeul, France.
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LIST OF PUBLICATIONS

Preprints

- [23]. (Arxiv) Paul Raux, Christophe Goupil, and Gatien Verley. Circuits of thermodynamic devices in stationary non-equilibrium. *Arxiv*, September 2023

Regular Articles

- [22]. (Article) Gatien Verley. Dynamical equivalence classes for markov jump processes. *J. Stat. Mech: Theory Exp.*, 2022(2) :023211, 2022
- [21]. (Article) Lydia Chabane, Alexandre Lazarescu, and Gatien Verley. Effective hamiltonians and lagrangians for conditioned markov processes at large volume. *J. Stat. Phys.*, 187(1), feb 2022
- [20]. (Article) Hadrien Vroylandt, Massimiliano Esposito, and Gatien Verley. Efficiency fluctuations of stochastic machines undergoing a phase transition. *Phys. Rev. Lett.*, 124(25), jun 2020
- [19]. (Article) Lydia Chabane, Raphaël Chétrite, and Gatien Verley. Periodically driven jump processes conditioned on large deviations. *J. Stat. Mech: Theory Exp.*, 2020(3) :033208, mar 2020
- [18]. (Proceeding) Hadrien Vroylandt, David Lacoste, and Gatien Verley. An ordered set of power-efficiency trade-offs. *J. Stat. Mech: Theory Exp.*, 2019(5) :054002, may 2019
- [17]. (Article) Hadrien Vroylandt and Gatien Verley. Non-equivalence of dynamical ensembles and emergent non-ergodicity. *J. Stat. Phys.*, 174(2) :404–432, Jan 2018
- [16]. (Article) Hadrien Vroylandt, David Lacoste, and Gatien Verley. Degree of coupling and efficiency of energy converters far-from-equilibrium. *J. Stat. Mech: Theory Exp.*, 2018
- [15]. (Article) Hadrien Vroylandt, Massimiliano Esposito, and Gatien Verley. Collective effects enhancing power and efficiency. *Europhys. Lett.*, 120(3) :30009, nov 2017
- [14]. (Article) H. Vroylandt, A. Bonfils, and G. Verley. Efficiency fluctuations of small machines with unknown losses. *Phys. Rev. E*, 93 :052123, 2016
- [13]. (Article) Gatien Verley. Nonequilibrium thermodynamic potentials for continuous-time markov chains. *Phys. Rev. E*, 93 :012111, 2016
- [12]. (Article) M. Polettoni, G. Verley, and M. Esposito. Efficiency statistics at all times : Carnot limit at finite power. *Phys. Rev. Lett.*, 114 :050601, 2015
- [11]. (Article) G. Verley, C. Van den Broeck, and M. Esposito. Work statistics in stochastically driven systems. *New J. Phys.*, 16(9) :095001, 2014
- [10]. (Article) S. Tusch, A. Kundu, G. Verley, T. Blondel, V. Miralles, D. Démoulin, D. Lacoste, and J. Baudry. Energy versus information based estimations of dissipation using a pair of magnetic colloidal particles. *Phys. Rev. Lett.*, 112 :180604, 2014
- [9]. (Article) G. Verley, T. Willaert, C. Van den Broeck, and M. Esposito. Universal theory of efficiency fluctuations. *Phys. Rev. E*, 90 :052145, 2014
- [8]. (Article) G. Verley, T. Willaert, C. Van den Broeck, and M. Esposito. The unlikely carnot efficiency. *Nat. Commun.*, 5 :4721, 2014
- [7]. (Article) G. Verley, C. Van den Broeck, and M. Esposito. Modulated two-level system : Exact work statistics. *Phys. Rev. E*, 88 :032137, 2013
- [6]. (Proceeding) G. Verley and D. Lacoste. Fluctuations and response from a Hatano and Sasa approach. *Phys. Scr.*, 86 :058505, 2012
- [5]. (Article) G. Verley and D. Lacoste. Fluctuation theorems and inequalities generalizing the second law of thermodynamics out of equilibrium. *Phys. Rev. E*, 86 :051127, 2012

- [4]. (Article) G. Verley, R. Chétrite, and D. Lacoste. Inequalities generalizing the second law of thermodynamics for transitions between non-stationary states. *Phys. Rev. Lett.*, 108 :120601, 2012
 - [3]. (Proceeding) G. Verley and D. Lacoste. Fluctuation relations and fluctuation-response for molecular motors. In *AIP Conf. Proc.*, volume 1332, pages 247–248, 2011
 - [2]. (Article) G. Verley, R. Chétrite, and D. Lacoste. Modified fluctuation-dissipation theorem for general non-stationary states and application to the Glauber-Ising chain. *J. Stat. Mech: Theory Exp.*, 10 :P10025, 2011
 - [1]. (Article) G. Verley, K. Mallick, and D. Lacoste. Modified fluctuation-dissipation theorem for non-equilibrium steady states and applications to molecular motors. *Europhys. Lett.*, 93 :10002, 2011
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AWARDS AND HONORS

- First prize of the French physical society for the best oral communication, Alain Bouissy Colloquium 2015
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SUPERVISION ACTIVITIES

- May-July 2023 : “Chemical thermodynamics out of equilibrium : chemical reaction networks”
Third year student : Amelle Khamkham
Informal supervisor : Paul Raux
 - 2021–2024 : “Conversion processes in thermodynamics and chemistry”
Coadvisor : Christophe Goupil (LIED)
PhD student : Paul Raux
 - June/July 2020 : “Brownian motion in geometric algebra”
Third year students : Arthur Clause and Jack Berat
 - 2018–2021 : “From rarity to typicality : the improbable journey of a large deviation”
Coadvisor : Raphaël Chétrite (Laboratoire J.A. Dieudonné)
PhD student : Lydia Chabane
 - 2015–2018 : “Efficiency fluctuations in small machines”
Coadvisor with HDR : Hendrik Hilhorst (LPT orsay)
PhD student : Hadrien Vroylandt
 - Avril/Juillet 2018 : “Non-equilibrium conductance matrix of periodically driven systems”
Fifth year student : Lydia Chabane
 - June/July 2016 : “From the density matrix formalism to the master equation”
Third year student : Lydia Chabane
 - June/July 2015 : “Efficiency fluctuation in machine with losses”
Third year student : Anthony Bonfils
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SCIENTIFIC ACTIVITIES

- March–May 2024 : Member of the selection committee for an assistant professor position at Matter and Complex Systems laboratory, Université Paris Cité.
 - October 2018 : Member of the doctoral committee for the PhD thesis of Jules Guioth, Grenoble Alpes University, “Chemical potential in stationary non-equilibrium in contact : a large deviation approach”.
 - February 2017 : Member of the doctoral committee for the PhD thesis of Kamran Shayanfard, Luxembourg University, “Stochastic Thermodynamics for Underdamped Brownian Particles : Equivalent Measures, Reversed Stochastic Processes and Feynman-Kac Techniques”.
 - November 2014 : Member of the doctoral committee for the PhD thesis of Tim Willaert, Hasselt University, “Stochastic Thermodynamics For Two State Systems”.
 - Member of the French Physical Society.
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REFERAL FOR PEEREVIEWED JOURNALS

See my [Publons](#) page for recent reviews. I regularly peer review for the following journals : EPJB, Europhys. Lett., J. Phys. A, J. Stat. Mech., J. Stat. Phys., Nat. Comm., NJP, PRE, PRL, PRX

ADMINISTRATIVE TASK

- (2018–present) Pedagogical coordination for analytical mechanics at Université Paris Sud (~ 170 étudiants).
 - (2016–2019) Pedagogical coordination for “Internet and Computer Skills”, C2I/PIX diploma at South Paris University (~ 270 students)
 - (2020–2022) Thesis supervision comity (IJClab).
 - (2015–2020) Laboratory board member (LPT).
 - (2015–2020) In charge of internship students for the LPT and lab visits.
 - (2010–2012) Seminar organization of the theoretical group of Physics and Chemistry Laboratory (one seminar every two weeks).
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TEACHING ACTIVITIES

	Lecturer at South Paris University (192 hours/year)
2022–2024	Practical works in physics (Agrégation),
2014–2024	Analytical mechanics (L3).
2020–2024	Physics of energy conversion and storage (M1)
2021–2024	Electric conversion for the energy transition (L3)
2019–2024	Geometric Algebra for physicists (L2),
2020–2021	Thermodynamics (L2)
2019–2021	Practical works in physics (Agrégation),
2018–2021	Numerical methods : python (L1)
2014–2020	Statistical Physics (M1),
2018–2019	Point mass mechanics (L1)
2015–2019	C2I and PIX : Internet and Computer Skills Certificate (L1),
2014–2017	Preparatory class at university for Engineering Schools (L2),
2015–2016	Ranking of Master internship (M1),
2014–2015	Practical works in physics (Agrégation),
	Teachings at Luxembourg university (14 hours).
2013–2014	Thermodynamics (L2), Lecturer : Massimiliano Esposito.
	Teachings at Université Pierre et Marie Curie (192 hours).
2009–2012	Classical mechanics, energy and motion (L1), Lecturers : Lydia Tchang-Brillet, Emmanuel Rollinde.
2009–2012	Mathematics for physicists (L2), Lecturer : Éric Brunet.
	Oral examination at I.S.E.N. (40 hours).
2006–2007	Mathematics (1st year), Lecturer : Alain Loncke.

CONFERENCES, SCHOOLS AND SEMINARS

Past events :

December 2022 Workshop : (Post)modern thermodynamics , Luxembourg (speaker)

May 2021	Conference “Interdisciplinary Challenges in Nonequilibrium Physics”, Online conference (Invited speaker)
June 2019	Workshop “Random Talk on Stochastic Thermodynamics”, SMRI, Santa Marinella (Invited Speaker)
January 2019	“Non-equilibrium conductance matrix – Assembly of energy converters”, LPTMS Orsay (Seminar)
September 2018	Conference “Thermodynamic stochastic : experiment and theory”, Max Planck Institute, Dresde (Poster)
April 2018	Seminar at SPEC, Ormes des Merisier, Saclay (Invited seminar)
April 2018	Seminar at LIED, Paris 7 University (Invited seminar)
July 2017	International Summer School FPSP XIV, Bruneck (poster)
July 2016	Stat. Phys. 26, international conference in statistical physics, Lyon (speaker)
June 2017	Dynamics, Thermodynamics, and Information Processing in Chemical Networks, Luxembourg University (participant).
April 2016	LPTMC seminar, Paris (Invited seminar)
November 2015	Claude Godrèche workgroup, IPhT, Saclay (talk)
February 2015	Alain Bouyssy Colloquium, Orsay (speaker : First price of french physical society)
January 2015	Conference “Luxembourg Out-of-equilibrium”, Luxembourg University (speaker and poster).
January 2015	Seminar at Theoretical Physics and Chemistry Laboratory, ESPCI, Paris (seminar)
October 2014	Claude Godrèche workgroup, Saclay IPhT (seminar)
September 2014	Euphonon Workshop, Le Mans (Invited speaker).
May 2014	Nonlinear Physics at the Nanoscale : A Cross-Fertilization on Stochastic Method, Max Planck Institute, Dresden (speaker and poster).
April 2014	Theory at sea : workshop of the flamish theoretical physics community, Ostende (Invited speaker).
December 2013	Thermodynamics of small systems, Solvay conference, Bruxelles (participant).
November 2013	Statistical mechanics and non linear physics, Lille (participant).
July 2013	Workshop on large deviations theory, London (short talk).
March 2013	Stochastics Thermodynamics, Nordita conference, Stockholm (participant).
January 2012	Workshop : Fluctuations theorems, “where do we go from here ?”, Paris (participant).
October 2011	Foundation and applications of non equilibrium statistical physics, Nordita conference, Stockholm (participant).
January 2011	Days of statistical physics, E.S.P.C.I., Paris (short talk).
September 2010	11th Granada seminar on numerical an statistical physics (participant).
March 2010	School of statistical physics, Raman Research Institute, Bangalore (poster).
January 2009	School in Les Houches, Thematic school on femtosecond impulsions (participant).

ORGANIZED CONFERENCES

8th and 9th June 2017	Theoretical methods for studying nonequilibrium fluctuations , Orsay
11 to 14 June 2018	EcoClim2018 : Basic training on climate issues , Orsay
7 to 14 June 2021	EcoClim2021 : Basic training on climate issues, second conference , Orsay

OTHERS SKILLS

English : Advanced.
French : Mother tongue.
Numerical calculations : Python, fortran, maple, octave, gnuplot and script bash.
Computer skills : Linux, Latex, Libreoffice, Inkscape.
