Pedro Eduardo Harunari[1,2]

[1] *Instituto de Física da Universidade de São Paulo, 05314-970 São Paulo, Brazil*
[2] *Complex Systems and Statistical Mechanics, Physics and Materials Science Research Unit, University of Luxembourg, Luxembourg L-1511 G.D. Luxembourg*

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PhD student at the "direct doctorate" (PhD without Masters degree) program of the University of São Paulo, Brazil, under the supervision of Carlos E. Fiore. Currently a visitor at the University of Luxembourg under the supervision of Massimiliano Esposito and Matteo Polettini. Research interests include extending Statistical Physics to the nonequilibrium regime, more specifically describing the performance of heat engines, the behavior of relevant quantities in systems going through phase transitions, studying properties of Markovian processes such as bounds and first-passage times and, more recently, applications to biophysical models and quantum systems.

Keywords: Stochastic Thermodynamics, phase transitions, Statistical Mechanics

PERSONAL INFORMATION

Contact	pedroharunari@gmail.com
Birth	15/November/1995, São Paulo, Brazil
Languages	Portuguese (mother tongue), advanced English, intermediate Spanish
ORCiD	0000-0001-7105-2404
Current address	University of Luxembourg, office BRB 0.10, Dpt. of Physics and Materials Science 162a, avenue de la Faïencerie L-1511, Limpertsberg, Luxembourg
Website	harunari.fig.if.usp.br/∼harunari

EDUCATION

2018–present PhD student (without Masters degree), Physics Institute of the University of São Paulo, Brazil
Title: "Phase transitions, temporal disorder and entropy prod. in systems with inversion symmetry"
Advisor: Prof. Carlos E. Fiore
Every course finished with the maximum grade A

2014–2017 Bachelor in Physics, Physics Institute of the University of São Paulo, Brazil
Complementary courses at: IMPA, CBPF and ICTP-SAIFR

LIST OF PUBLICATIONS

Citations: 59, h-index: 4 (from Google Scholar)

[1] P. E. Harunari, M. M. de Oliveira, and C. E. Fiore, Phys. Rev. E **96**, 042305 (2017).
[2] J. M. Encinas, P. E. Harunari, M. de Oliveira, and C. E. Fiore, Scientific reports **8**, 1 (2018).
[3] C. F. Noa, P. E. Harunari, M. de Oliveira, and C. Fiore, Physical Review E **100**, 012104 (2019).
[4] P. E. Harunari, C. E. Fiore, and K. Proesmans, Journal of Physics A: Mathematical and Theoretical **53**, 374001 (2020).
[5] P. E. Harunari, F. S. Filho, C. E. Fiore, and A. Rosas, Phys. Rev. Research **3**, 023194 (2021).
[6] C. E. Fiore, P. E. Harunari, C. E. F. Noa, and G. T. Landi, Phys. Rev. E **104**, 064123 (2021).
[] I. N. Mamede, P. E. Harunari, B. A. N. Akasaki, K. Proesmans, and C. E. Fiore, Phys. Rev. E **105**, 024106 (2022).

PROFESSIONAL EXPERIENCE

Apr/2021–present: visitor at Massimiliano Esposito's Complex Systems and Statistical Mechanics group
Supervision: Matteo Polettini and Massimiliano Esposito
Venue: Luxembourg

Dec/2021–Jan/2022: visitor at Jukka Pekola's PICO group
Supervision: Jukka Pekola
Venue: Finland

Jul/2021–Sep/2021 visitor at The Abdus Salam International Centre for Theoretical Physics (ICTP)
Supervision: Edgar Róldan
Venue: Italy

2020–2020 Organizer of the Stastistical Physics seminar series
21 seminars virtually presented, mostly by professors. Co-organizer: Carlos E. Fiore

2018–2020 Teaching assistant at the Univ. of São Paulo for the courses below:
Thermodynamics (2020)
Statistical Mechanics (2018 and 2019)
Graduate level Statistical Mechanics (2018)

2016–2017 Undergraduate research program
Advisor: Carlos E. Fiore

2015–2016 Undergraduate research program
Advisor: Mário J. de Oliveira

GRANTS

2021–2022 FAPESP - Grant for internship abroad (BEPE)

2018–2022 FAPESP - Doctorate without Masters degree

2016–2017 FAPESP - Undergraduate research program

2015–2016 CNPq - Undergraduate research program

EVENTS ATTENDED

2021 National Statistical Physics Meeting, Universidade Federal de São João del-Rei (UFSJ)
Talk: "Inferences from Statistics of a Few Observable Transitions"
Venue: online

2021 Statistical Physics of Complex Systems, The Abdus Salam International Centre for Theoretical Physics (ICTP)
Poster: "Entropy production fluctuation in phase transitions"
Venue: Trieste, Italy

2021 Bangalore School on Statistical Physics XII, International Center for Theoretical Sciences (ICTS)
Venue: online

2021 "Encontro de Outono", Brazilian Physical Society
Talk: "Entropy Production fluctuations in nonequilibrium transitions"
Venue: online

2021 Stochastic Thermodynamics II, Santa Fe Institute
Venue: online

2021 APS March Meeting
Talk: "Quantitative compartison of different time-periodic Thermodynamic Uncerainty Relations"
Venue: online

2020 Quantum Thermodynamics of Non-equilibrium systems, Donostia International Physics Center
Venue: online

2020 Statistical Physics Seminar Series
Talk: "Stochastic Thermodynamics: Schnakenberg, FT and TUR"
Venue: online

2020 "Encontro de Outono", Brazilian Physical Society
Talk: "Stochastic pump as a model to study nonequilibrium properties"
Venue: online

2020 Quantum Thermodynamics for Young Scientists
Poster: "Time assymetric reciprocity relations for an arbitrarily long single-particle stochastic pump and its exact solution"
Venue: Bad Honnef, Germany

2019 *"Coloquinho"*, series of talks organized by students
Invited talk: "Stochastic Thermodynamics: basics and some modern aspects"
Venue: IFT-UNESP, ICTP-SAIFR, Brazil

2019 *"Physics Giants: Einstein Week"*, series of talks organized by students
Invited talk: "Einstein's contributions to Statistical Mechanics"
Venue: USP, Brazil

PEER REVIEW CONTRIBUTIONS

- Journal of Physics A: Mathematical and Theoretical
- Journal of Physics Communications