Marco Baldovin

Dipartimento di Fisica, "La Sapienza" University
P.le A. Moro 5, 00185, Rome, Italy

ACADEMIC POSITION

Postdoctoral Researcher
"Sapienza" University of Rome, Department of Physics
Project: "Statistical Mechanics of out-of-equilibrium systems"
Scientific coordinator: A.Vulpiani

EDUCATION

Ph.D. Physics 2016-2019
"Sapienza" University of Rome, Scuola di dottorato "Vito Volterra"
Thesis: "Statistical Mechanics of Hamiltonian Systems with Bounded Kinetic Terms: an Insight into Negative Temperature"
Thesis advisor: A.Vulpiani

M.S. Physics 2014-2016
"Sapienza" University of Rome
Thesis: "Statistical Properties of Long-Range Interacting Systems"
Cum Laude
Thesis advisor: A.Vulpiani; co-advisor: L.Cerino

B.S. Physics 2011-2014
"Sapienza" University of Rome
Thesis: "Dynamics of Systems with Infinite Classical Particles"
Cum Laude
Thesis advisor: C.Marchioro

RESEARCH INTERESTS

- Statistical mechanics: negative temperatures, Hamiltonian systems, long-range interactions
- Stochastic processes: model building from data, response theory

PUBLICATIONS

12. M.Baldovin, F.Cecconi, A.Vulpiani, "Understanding causation via correlations and linear response theory", *Phys. Rev. Res.* **2**, 043436 (2020) (https://doi.org/10.1103/PhysRevResearch.2.043436).

11. M.Baldovin, "Statistical Mechanics of Hamiltonian Systems with Bounded Kinetic Terms: An Insight into Negative Temperature", .Springer Theses,Springer (2020)

10. A.Vulpiani, M.Baldovin, "Effective equations in complex systems: from Langevin to machine learning", *J. Stat. Mech.* **01**, 4003 (2020) (https://doi.org/10.1088/1742-5468/ab535c).

9. M.Baldovin, F.Cecconi, A.Vulpiani, "Effective equations for reaction coordinates in polymer transport", *J. Stat. Mech.* **01**, 3208 (2020) (https://doi.org/10.1088/1742-5468/ab5368).

8. M. Baldovin, L. Caprini, A. Vulpiani, "Irreversibility and typicality: A simple analytical result for the Ehrenfest model", *Physica A* **524**, 422-429 (2019) (https://doi.org/10.1016/j.physa.2019.04.188).

7. M. Baldovin, A. Vulpiani, A. Puglisi, A. Prados, "Derivation of a Langevin equation in a system with multiple scales: The case of negative temperatures", *Phys. Rev. E* **99**, 060101(R) (2019) (https://doi.org/10.1103/PhysRevE.99.060101).

6. F.Miceli, M.Baldovin, A.Vulpiani, "Statistical mechanics of systems with long-range interactions and negative absolute temperature", *Phys. Rev. E* **99**, 042152 (2019) (https://doi.org/10.1103/PhysRevE.99.042152).

5. M.Baldovin, A.Puglisi, A.Vulpiani, "Langevin equations from experimental data: the case of rotational diffusion in granular media", *PLoS ONE* **14**, e0212135 (2019) (https://doi.org/10.1371/journal.pone.0212135).

4. M.Baldovin, F.Cecconi, M.Cencini, A.Puglisi, A.Vulpiani, "The Role of Data in Model Building and Prediction: A Survey Through Examples", *Entropy* **20**, 807 (2018) (https://doi.org/10.3390/e20100807).

3. M.Baldovin, "Physical interpretation of the canonical ensemble for long-range interacting systems in the absence of ensemble equivalence", *Phys. Rev. E* **98**, 012121 (2018) (https://doi.org/10.1103/PhysRevE.98.012121).

2. M.Baldovin, A.Puglisi, A.Vulpiani, "Langevin equation in systems with also negative temperatures", *J. Stat. Mech.* **04**, 3207 (2018) (https://doi.org/10.1088/1742-5468/aab687).

1. M.Baldovin, A.Puglisi, A.Sarracino, A.Vulpiani, "About thermometers and temperature", *J. Stat. Mech.* **11**, 3202 (2017) (https://doi.org/10.1088/1742-5468/aa933e).

TALKS

3. StatPhys27, Buenos Aires, 7/08/2019 *"Statistical properties of Hamiltonian systems at negative absolute temperatures"*

2. XXIII National Conference on Statistical Physics and Complex Systems, University of Parma, 6/22/2018 *"Langevin equation in systems with also negative temperatures"*

1. FPU 2018, University of Padova, 4/14/2018 *"About thermometers and temperature"*

SCHOLARSHIPS AND AWARDS

- 2020 University Grant "Avvio alla ricerca", project: "Study of response for out-of-equilibrium Hamiltonian chains in presence of negative absolute temperature"
- 2020 Ph.D. thesis selected for publication in "Springer Theses" series
- 2016-2019 Ph.D. Scholarship Scuola di dottorato "Vito Volterra"
- 2015-2016 M.S. Scholarship for excellent results (*Percorso di eccellenza*)
- 2011-2014 B.S. Scholarship for honor students (*Studente meritevole*)

ATTENDED SCHOOLS

4. Statistical Mechanics of Active Matter, L'Aquila, Italy, June 12 - 14, 2019
3. Winter School: Physics and Mathematics of Turbulent Flows at Different Scales, Les Houches, France, February 24 - March 1, 2019
2. 2018 Leuven Summer school on nonequilibrium physics, KU Leuven, Belgium, May 28 - June 1, 2018
1. Fundamental Problems in Statistical Physics XIV, Bruneck, Italy, Jul 16 - 29, 2017

OTHER ACADEMIC ACTIVITIES

Thesis co-advisor:

- Camilla Sarra, M.S. Physics, "Responses and information transfer in spatially extended non-equilibrium systems"
- Fabio Miceli, M.S. Physics, "Statistical Mechanics of Long-Range Interacting Systems at Negative Temperature"

COMPUTER SKILLS

- Programming languages: C/C++, CUDA, Python, Mathematica, R, UNIX shell scripting

LANGUAGES

- English (advanced), Italian (mother tongue)

Date: January 4th, 2021

Signature: