Thibaut Arnoulx de Pirey | CV

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Academic positions

Indian Institute of Science, Bangalore, India.   Apr. 2024 –
CV Raman Postdoctoral fellow. Supervision : V. Guttal & S. Ramaswamy.

Technion Physics Department, Haifa, Israel.   Nov. 2021 – Dec. 2023
Postdoctoral position. Supervision : Y. Kafri & G. Bunin.

Higher education

PhD in Physics   2018 – 2021
Infinite dimensional active matter and stochastic calculus for path integration.
Under the supervision of Frédéric van Wijland.
Laboratoire Matière et Systèmes Complexes, Université Paris Cité. Paris, France.

Master degree in theoretical physics, awarded with highest honors.   2015 – 2017
International Center for Fundamental Physics (ICFP)
Ecole Normale Supérieure de Paris. Paris, France.

- 6 months research internship in the Xtreme gravity group of the the Montana State University. Bozeman, Montana, USA. Supervision : Nicolás Yunes.
  Massive scalar-tensor gravity: cosmological evolution and Solar System consistency.
- 3 months research internship in the Quantitative Life Sciences section of the Abdus Salam International Center for Theoretical Physics. Trieste, Italy. Supervision : Matteo Marsili.
  Statistical mechanics of coupled complex economies in the Arrow-Debreu model of general equilibrium.

Bachelor degree in physics, awarded with highest honors.   2014 – 2015
Ecole Normale Supérieure de Paris. Paris, France.

Grants & Fellowships

CV Raman Postdoctoral Fellowship, Indian Institute of Science.   2024 – 2025
PhD Grand, CFM Fundation for research.   2018 – 2021

Research interests

Nonequilibrium statistical mechanics – Theoretical ecology – Active matter – Disordered systems – Random matrices – Stochastic processes.

Teaching experience

Teaching assistant (160 hours) in the "Frontières du Vivant" bachelor program of the Université Paris Cité. Topics: Newtonian mechanics, thermodynamics, geometrical optics and electronics.   2018 – 2021

List of publications

Preprints

1. Thibaut Arnoulx de Pirey, Yariv Kafri, and Sriram Ramaswamy. The anomalous long-ranged influence of an inclusion in momentum-conserving active fluids. *arXiv 2402.12996*, 2024. `https://arxiv.org/pdf/2402.12996.pdf`

2. Thibaut Arnoulx de Pirey and Guy Bunin. Critical behavior of a phase transition in the dynamics of interacting populations. *arXiv 2402.05063*, 2024. `https://arxiv.org/pdf/2402.05063.pdf`

3. Thibaut Arnoulx de Pirey. Extreme value statistics of non-markovian processes from a new class of integrable nonlinear differential equation. *arXiv 2402.05091*, 2024. `https://arxiv.org/pdf/2402.05091.pdf`

Published

1. Thibaut Arnoulx de Pirey and Guy Bunin. Many-species ecological fluctuations as a jump process from the brink of extinction. *Physical Review X*, 14(1):011037, 2024. `https://arxiv.org/pdf/2306.13634.pdf`

2. Thibaut Arnoulx de Pirey and Frédéric van Wijland. A run-and-tumble particle around a spherical obstacle: the steady-state distribution far-from-equilibrium. *Journal of Statistical Mechanics: Theory and Experiment*, 2023(9):093202, dec 2023. `https://arxiv.org/pdf/2303.00331.pdf`

3. Thibaut Arnoulx de Pirey and Guy Bunin. Aging by near-extinctions in many-variable interacting populations. *Physical Review Letters*, 130(9):098401, 2023. `https://arxiv.org/pdf/2206.15229.pdf`

4. Thibaut Arnoulx de Pirey and Frédéric van Wijland. Nonlinear analog of the complexity-stability transition in random dynamical systems: a replica calculation. *Journal of Physics A: Mathematical and Theoretical*, 56(1):015003, 2023 . `https://arxiv.org/pdf/2207.04468.pdf`

5. Thibaut Arnoulx de Pirey, Leticia F Cugliandolo, Vivien Lecomte, and Frédéric van Wijland. Path integrals and stochastic calculus. *Advances in Physics*, 71(1-2):1–85, 2022. `https://arxiv.org/pdf/2211.09470.pdf`

6. Thibaut Arnoulx de Pirey, Alessandro Manacorda, Frédéric van Wijland, and Francesco Zamponi. Active matter in infinite dimensions: Fokker–planck equation and dynamical mean-field theory at low density. *The Journal of Chemical Physics*, 155(17):174106, 2021. `https://arxiv.org/pdf/2108.02407.pdf`

7. David Martin and Thibaut Arnoulx de Pirey. Aoup in the presence of brownian noise: a perturbative approach. *Journal of Statistical Mechanics: Theory and Experiment*, 2021(4):043205, 2021. `https://arxiv.org/pdf/2009.13476.pdf`

8. Thibaut Arnoulx de Pirey, Gustavo Lozano, and Frédéric van Wijland. Active hard spheres in infinitely many dimensions. *Physical review letters*, 123(26):260602, 2019. `https://arxiv.org/pdf/1910.03302.pdf`

9. Thibaut Arnoulx de Pirey Saint Alby and Nicolás Yunes. Cosmological evolution and solar system consistency of massive scalar-tensor gravity. *Physical Review D*, 96(6):064040, 2017. `https://arxiv.org/pdf/1703.06341.pdf`