Assaf Shapira

✉ assaf.shapira@normalesup.org
assafshap.github.io

Research interests

In my research, I am mostly interested in mathematical statistical physics, and in particular in time scale of random systems. In my PhD I studied a certain type of interacting particle systems called kinetically constrained models originally introduced in order to understand glassy materials; where my main focus was on their behavior in a disordered environment.

Education

2016–2019 **PhD. in Mathematics**.
Paris Diderot University, under the supervision of Cristina Toninelli.

2014–2016 **M.Sc. in Theoretical Physics**.
École Normale Supérieure, Paris.

2010–2014 **B.Sc. in Mathematics and Physics**.
Technion, Haifa.

Work and research

2021– **Associate professor (maître de conférences)**, *MAP5, Université Paris Cité*.

2019–2021 **Postdoc**, *Roma Tre University*.

2017–2019 **Teaching assistant**, *Paris Diderot University*.

2016 **Research internship in statistical physics**, *LPTENS*, under the supervision of Kay Wiese.

2015 **Research internship in probability**, *LPMA*, under the supervision of Giambattista Giacomin and Cristina Toninelli.

2014 **Instructor in an experimental physics course**, *Technion's physics department*.

2013 **Section editor in "Netgar"**, *Technion's mathematics department's journal*.

2013 **North Rhine-Westphalia scholarship program**, *University of Bielefeld*, research in experimental physics and nanotechnology.

2012 **Kupcinet Getz summer school**, *Weizmann Institute of Science*, research internship in probability under the supervision of Itai Benjamini.

Publications and Preprints

- Clément Erignoux, Alexandre Roget, Assaf Shapira, and Marielle Simon. "Hydrodynamic behavior near dynamical criticality of a facilitated conservative lattice gas". In: *arXiv preprint arXiv:2403.09324* (2024).
- Assaf Shapira. "Noncooperative models of kinetically constrained lattice gases". In: *arXiv preprint arXiv:2301.13559* (2023).
- Assaf Shapira and Kay Jörg Wiese. "Anchored advected interfaces, Oslo model, and roughness at depinning". In: *Journal of Statistical Mechanics: Theory and Experiment* 2023.6 (2023).
- Clément Cosco and Assaf Shapira. "Topologically induced metastability in a periodic XY chain". In: *Journal of mathematical physics* 62 (2021).
- Anatole Ertul and Assaf Shapira. "Self-diffusion coefficient in the Kob-Andersen model". In: *Electronic Communications in Probability* 26 (2021).
- Tyler Helmuth and Assaf Shapira. "Loop-erased random walk as a spin system observable". In: *Journal of Statistical Physics* (2020).
- Fabio Martinelli, Assaf Shapira, and Cristina Toninelli. "Diffusive scaling of the Kob–Andersen model in $\mathbb{Z}^d$". In: *Annales de l'Institut Henri Poincaré, Probabilités et Statistiques* 56.3 (2020).
- Assaf Shapira. "A note on the spectral gap of the Fredrickson-Andersen one spin facilitated model". In: *Journal of Statistical Physics* (2020).
- Assaf Shapira. "Hydrodynamic limit of the Kob-Andersen model". In: *arXiv preprint arXiv:2003.08495* (2020).
- Assaf Shapira. "Kinetically constrained models with random constraints". In: *Annals of Applied Probability* 30.2 (2020).
- Assaf Shapira and Kay Jörg Wiese. "An exact mapping between loop-erased random walks and an interacting field theory with two fermions and one boson". In: *SciPost Physics* 9 (2020).
- Assaf Shapira. "Metastable behavior of bootstrap percolation on Galton-Watson trees". In: *ALEA* 16 (2019).
- Assaf Shapira and Erik Slivken. "Time scales of the Fredrickson-Andersen model on polluted $\mathbb{Z}^2$ and $\mathbb{Z}^3$". In: *arXiv preprint arXiv:1906.09949* (2019).
- Lucas Benigni, Clément Cosco, Assaf Shapira, and Kay Jörg Wiese. "Hausdorff dimension of the record set of a fractional Brownian motion". In: *Electronic Communications in Probability* 23 (2018).
- Giambattista Giacomin, Christophe Poquet, and Assaf Shapira. "Small noise and long time phase diffusion in stochastic limit cycle oscillators". In: *Journal of Differential Equations* 264.2 (2018).
- Amichai Lampert and Assaf Shapira. "On maximizing the speed of a random walk in fixed environments". In: *Electronic Communications in Probability* 18 (2013).