Piet Lammers

Dutch, born 14 March 1995.

LPSM, CNRS, Sorbonne Université
4 place Jussieu, 75005 Paris, France
piet.lammers@cnrs.fr
https://pietlammers.com



Current position

2023–present Junior Professor Chair (tenure-track), CNRS.

Research funding

- ERC Starting Grant — principal investigator, €1,432,907, *Geometric Structure of Lattice Spin $O(N)$ models*, grant agreement 101302988, 2027–2032 (starts 1 February 2027).
- ANR (France) — principal investigator, €200,000, grant ANR-23-CPJ1-0150-01, 2023–2028.

Past positions and education

2020–2023 Postdoctoral researcher in Mathematics, IHÉS, Paris.
Supervisor: **Hugo Duminil-Copin**.

2016–2020 PhD in Mathematics, University of Cambridge.
Supervisor: **James Norris**.

2015–2016 Master's in Mathematics, University of Cambridge.

2012–2015 Bachelor's in Liberal Arts, Utrecht University.

Supervision

Current

- **Joseph Chen**: postdoc, 2025–present. Previously a PhD candidate with **Eyal Lubetzky** at NYU.
- **Thibault Durand**: PhD candidate, 2025–present. Previously a student at ENS Ulm.
- **Jonas Wyss**: PhD candidate, 2025–present. Previously a student at ETH Zürich. Co-supervised with **Barbara Dembin** (IRMA, Strasbourg).

Past

- **Lucas D'Alimonte**: postdoc, 2024–2026. Previously a PhD candidate with **Ioan Manolescu** at Université de Fribourg. Now a postdoc with **Christophe Garban** at Université Lyon 1.
- **Salomé Guerré** and **Romain Dufetelle**: first-year master's (M1) research project, 2025, while at Sorbonne Université.
- **Loïc Gassmann**: second-year master's (M2) intern, 2023, while at ENS Paris-Saclay. Now a PhD candidate with **Ioan Manolescu**.

Distinctions

2023 Claude-Antoine Peccot Prize, Collège de France; Cours Peccot delivered in 2024.

2018 Awarded Grade 1 in the DPMMS, University of Cambridge essay competition.

Research interests

I am interested in understanding the mathematical principles behind the emergence of large-scale order and disorder in random systems. My research sits on the interface between mathematical physics and probability theory, mostly focusing on the study of *lattice models* within statistical mechanics. My recent work concerns the *Berezinskii–Kosterlitz–Thouless (BKT) transition* and the *six-vertex model* in particular.

Publications

17. **Conformal invariance of the planar four-state Potts model and its random-cluster representation**, with **Emile Averous**, **Hugo Duminil-Copin**, **Tiancheng He**, and **Ioan Manolescu**, preprint (2026).
16. **Conformal invariance of the six-vertex model's height function**, with **Emile Averous**, **Hugo Duminil-Copin**, **Tiancheng He**, and **Ioan Manolescu**, preprint (2026).
15. **The BKT transition and surface tension differentiability**, with **Thibault Durand**, preprint (2026).
14. **Free energy analyticity of the disordered XY model and Debye screening in the 2D Coulomb gas**, with **Lucas D'Alimonte**, preprint (2026).
13. **Gaussian free field convergence of the six-vertex model with $-1 \leq \Delta \leq -\frac{1}{2}$**, with **Hugo Duminil-Copin**, **Karol Kajetan Kozlowski**, and **Ioan Manolescu**, preprint (2026).
12. **Bijecting the BKT transition**, preprint (2023).
11. **A dichotomy theory for the height functions of the BKT transition**, preprint (2022).
10. **Delocalisation and continuity in 2D: loop $O(2)$, six-vertex, and random-cluster models**, with **Alexander Glazman**, Commun. Math. Phys. **406**, article 108 (2025).
9. **Non-reversible stationary states for majority voter and Ising dynamics on trees**, with **Fabio Toninelli**, Electron. J. Probab. **29**, no. 119, 1–18 (2024).
8. **Height function localisation on trees**, with **Fabio Toninelli**, Combin. Probab. Comput. **33**, 50–64 (2024).
7. **Delocalisation and absolute-value-FKG in the solid-on-solid model**, with **Sébastien Ott**, Probab. Theory Relat. Fields **188**, 63–87 (2024).
6. **Macroscopic behavior of Lipschitz random surfaces**, with **Martin Tassy**, Probab. Math. Phys. **5**, 177–267 (2024).
5. **Diffusivity of a walk on fractures of a hypertorus**, Ann. Inst. Henri Poincaré Probab. Stat. **59**, 208–229 (2023).
4. **Height function delocalisation on cubic planar graphs**, Probab. Theory Relat. Fields **182**, 531–550 (2022).
3. **A generalisation of the honeycomb dimer model to higher dimensions**, Ann. Probab. **49**, 1033–1066 (2021).
2. **Variational principle for weakly dependent random fields**, with **Martin Tassy**, J. Stat. Phys. **179**, 846–870 (2020).
1. **The bunkbed conjecture on the complete graph**, with **Peter van Hintum**, European J. Combin. **76**, 175–177 (2019).

Invited lecture series

- Berezinskii–Kosterlitz–Thouless transition: links between the XY model and height functions, École de Physique des Houches; May 2027 (scheduled).
- GFF convergence of the six-vertex model for $-1 \leq \Delta \leq -\frac{1}{2}$, CMM, Universidad de Chile, Santiago; December 2025.
- Mixing and triviality in the XY model, Mathematisches Forschungsinstitut Oberwolfach; November 2024.
- La transition de Berezinsky–Kosterlitz–Thouless au point critique, Cours Peccot, Collège de France, Paris; January–February 2024.
- Integer-valued height functions, invited instructional session, CIRM, Marseille; August 2023.

Teaching

- **Lecturer**: Ising model (second-year master's, M2), Sorbonne Université; spring semesters 2025, 2026, and 2027.
- **Teaching assistant**: Probability (second-year undergraduate, L2, intensive mathematics track), Sorbonne Université; spring semester 2024.
- **Lecturer**: Percolation theory (second-year master's, M2), Université Paris-Saclay; autumn semester 2022.
- **Teaching assistant**: Probability (first-year undergraduate, Part IA) and Advanced Probability (master's level, Part III), University of Cambridge; 2017–2019. Led example classes.
- **Undergraduate supervisor**: Probability, Markov Chains, Optimisation, and Applied Probability, University of Cambridge; 2016–2019. Led small-group supervisions for approximately 80 undergraduate students.

Scientific organisation

- Junior workshop on statistical mechanics, CIRM, Marseille; 2–6 August 2027 (scheduled). Co-organised with **Lucas D'Alimonte**, **Franco Severo**, and **Diederik van Engelenburg**.
- Geometric Methods in Percolation and Spin Models (spring school and workshop), ICTS, Bengaluru; 2–13 March 2026. Co-organised with **Subhajit Goswami** and **Trishen Gunaratnam**.
- Percolation Today, online seminar; 2024–2025. Co-organised with **Barbara Dembin** and **Franco Severo**.
- Probability and Analysis Informal Seminar, IHÉS, Bures-sur-Yvette; 2022–2025. Co-organised with **Thierry Bodineau** and **Yilin Wang**.
- Organised and chaired New Aspects of Spin Systems at the 11th Bernoulli–IMS World Congress in Probability and Statistics, Ruhr University Bochum; 14 August 2024. Invited speakers: **Catherine Wolfram**, **Marcin Lis**, and **Jiaming Xia**.

Academic service

- **Referee reports** for the following journals: *Annals of Mathematics*; *CPAM*; *CMP*; *Annals of Probability*; *Astérisque*; *IMRN*; *Ann. IHP*; *Probability and Mathematical Physics*; *EJP*; *JSP*; *ALEA*.
- **Quick opinions** for the following journals: *Inventiones Mathematicae*; *Mathematische Annalen*; *Publications Mathématiques de l'IHÉS*; *PTRF*; *Forum Math. Sigma*.
- **PhD defense committee member** for **Tomás Alcalde López**, TU Wien, March 2027 (scheduled).
- **PhD monitoring committee member** (*comité de suivi individuel*) for **Elias Nohra**, Sorbonne Université, 2023–2027.

Revised on 19 November 2026.