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Alexander GLAZMAN

Curriculum Vitæ

Main areas of research

My research lies in probability theory, with connections to mathematical physics and combinatorics:

- phase transition in lattice models: Ising, Potts, percolation, self-avoiding walk, loop $O(n)$, six-vertex, random Lipschitz function, dimer model;
- (de)localisation of integer-valued height functions/random surfaces;
- two-dimensional critical phenomena: universality, conformal invariance;
- Gibbs measures and convergence of interfaces: Ornstein–Zernike theory, wetting;
- Fortuin–Kasteleyn–Ginibre inequality of positive association;
- perfect matchings (dimers) and 4-colorings on lattices;
- percolation on planar graphs, Benjamini–Schramm conjectures.

Academic degrees

2022 **Habilitation**, *University of Vienna*, Austria
"Phase transitions in two-dimensional lattice models"

2016 **Ph.D**, *University of Geneva*, Switzerland
"Properties of self-avoiding walks and a stress tensor in the O(n) model". Adv: Stanislav Smirnov

2015 **Cand. Sci. Phys. Mat.**, *St Petersburg Department of Steklov Institute*, Russia
"Generalized flowers in k-connected graphs". Adv: Dmitry Karpov.

2011 **Diploma of Mathematician**, *St Petersburg State University*, Russia

Academic employment

2024–now **Associate Professor**, *University of Innsbruck*

2022–2024 **Assistant Professor**, *University of Innsbruck*

Sep-Dec 2021 **Invited lecturer**, *St. Petersburg State University*

2020–22 **Postdoc**, *University of Vienna*

2019–20 **Postdoc**, *University of Fribourg*

2016–19 **Postdoc**, *Tel Aviv University*

01–08/2012 **Researcher**, *Chebyshev Laboratory, St. Petersburg*

Academic awards

2025 **FWF Astra award**, *€1'000'000 funding for a research project, 18 young researchers in Austria received it in 2025 across all sciences*, https://www.uibk.ac.at/de/newsroom/2025/drei-astra-preise-an-die-universitat-innsbruck/

Grants

Projects

2026-31 **PI**, *Phase transitions and scaling limits*, Austrian Science Fund, €1'000'000, University of Innsbruck

2021–26 **PI**, *Order–disorder phase transition in 2D lattice models*, Austrian Science fund, €399,577, Transferred from the University of Vienna to the University of Innsbruck, Austria

2018–20 **PI**, *Combinatorial approach to critical 2D lattice models*, Swiss National Science Foundation, CHF 123,307, Tel Aviv University, Israel and University of Fribourg, Switzerland

2016–18 **PI**, *Observables in lattice models*, Swiss National Science Foundation, CHF 67,200, Tel Aviv University, Israel

Teaching

Teaching experience

from 2025 **Instructor on BSc courses in German**, *Innsbruck*
Stochastik I (measure theory, basic probability), Statistics

2020–now **Instructor on MSc courses in English**, *Innsbruck, Vienna (2020-22)*
Measure Theory, Probability Theory (martingales, Brownian motion)

2019–current **Instructor on advanced courses on Statistical Mechanics**, *Innsbruck (2023-present), Vienna (2022), St. Petesburg (2021, online), Tel Aviv (2019)*

2019 **Supervisor of minor master thesis in French**, *University of Fribourg (non-math students)*

2010–20 **TA in English/Russian/French/German**, *St. Petersburg, Geneva, Vienna, Innsbruck*
Quantum mechanics; Probability; Analysis; Algebra; Discrete mathematics; Statistics for biologists

Pedagogical training

2024 **Science communication course, 4h**, *University of Innsbruck*
Science communication under pressure: scientists' survival guide for the public arena

2023-24 **University didactics in practice, 9h**, *University of Innsbruck*
Case study dialogues

2023 **Legal foundations of teaching, 4h**, *University of Innsbruck*

2010-11 **Teaching practice, 240h (4 ECTS)**, *St. Petersburg State University*
Teaching an MSc course on Graph Theory with a pedagogical mentorship of Prof. Dmitry Karpov

2008-10 **Courses on Psychology and Pedagogy, 132h (3 ECTS)**, *St. Petersburg State University*

Outreach

from 2023 **Head of the organizing team of Náboj in Innsbruck, 150-200 participants/year**, *international math competition for pupils, participants from the West of Austria and the North of Italy*, naboj.org

2013-16 **Founder of "Club de Math" in Geneva**, *Instructor and organiser of three open mathematical olympiads.*, unige.ch/math/clubmath

2007-14 **Teacher of math olympiad classes**, *Russia (St. Petersburg, Kirov, Izhevsk) and Kazakhstan*

Academic service

Supervision and mentorship

2025–now **Ulrik Hansen**, *Postdoc*

2024 Mar–Jul **Paul Rax**, *ENS internship*

2023–now **David Beck-Tiefenbach**, *PhD student*

2022–25 **Lucas Rey**, *PhD student*, Paris-Dauphine
Co-advisor with Béatrice de Tilière (University Paris Dauphine) and Marcin Lis (TU Vienna)

2022–now **Maran Mohanarangan**, *PhD student*
Cotutelle with Ioan Manolescu (University of Fribourg)

2021–25 **Moritz Dober**, *PhD student*, University of Vienna

2021–22 **Kieran Ryan**, *Postdoc*

2020 Mar–Jul **Emmanuel Michta**, *ENS internship*

Supervision of MSc and BSc thesis

2024–now **Florian Willmann**, *MSc thesis "Sharpness of the phase transition in the Baxter-Wu model"*, University of Innsbruck

2023 **David Beck-Tiefenbach**, *MSc thesis "The loop $O(n)$ model and Monte Carlo methods in statistical mechanics"*, University of Vienna

2022 **Nina Mitrovic**, *BSc thesis "Markov Chains and Mixing Times"*, University of Vienna

2022 **Gregor Kirchner**, *BSc thesis "Random walks and electric networks"*, University of Vienna

Conference/workshop organisation

2024 **Organizer of a workshop**, *Austrian Stochastic Days 2024*

2022 **Member of organising team**, *Austrian Stochastic Days 2022*, University of Vienna

Institutional responsibilities at the University of Insbruck

2024–now **Member of committee**, *New curriculum in BSc in mathematics*

2024–now **Member of committee**, *Habilitation of Tobias Fritz*

2023–now **Co-organiser of the Mathematics Colloquium, with Birgit Schörkhuber**

2022–now **Co-organiser of the Probability seminar, with Ecaterina Sava-Huss**

2024 **Member of committee**, *Habilitation of Sebastien Court*

2024 **Member of committee**, *Hiring TT Assistant Professor*, Mathematics department

2023–24 **Member of Faculty Council**, Faculty for Mathematics, Computer Science and Physics

Previous organisational work

2021–22 **Founder/organiser of the (Not so) Informal Probability Seminar**
Probability/Math Finance/Combinatorics groups at University of Vienna, TU Vienna, ISTA

2015–16 **Seminar in Probability and Mathematical Physics**, *University of Geneva*

2014–16 **Reading group for junior researchers**, *University of Geneva*

Reviewing activity

Inventiones Mathematicae (**Invent. Math.**), Journal of Statistical Physics (**JSP**), Annals of Probability (**AOP**), Communications in Mathematical Physics (**CMP**), Electronic Journal of Probability (**EJP**), Annales de l'Institut Henri Poincaré (**AIHP**) Probabilités et Statistiques (B) and Combinatoires (C), Discrete Math.

Talks

Invited talks at conferences/workshops and colloquia

2025 **Sapienza University (Rome)**, *Random Geometric Structures and Statistical Physics*

2025 **NYU Shanghai**, *Symposium on Critical Exponents, Scaling Limits and Universality: Challenges from Statistical Physics*

2025 **University of Bielefeld**, *Mathematics Colloquium*

2025 **University of Cincinnati**, *Math Department Colloquium*

2025 **TU Darmstadt**, *Rhein-Main Colloquium Stochastics*

2024 **LMU (Munich)**, *Augsburg–Munich Probability colloquium*

2024 **ISTA (Austria)**, *Probability meets combinatorics*

2024 **ETH Zurich**, *Percolation and random fields*

2024 **SwissMAP research station, Les Diablerets (CH)**, *Workshop in Mathematical Physics*

2023 **Helsinki**, *Stochastic sauna*

2023 **Sorbonne University (Paris)**, *Dimers ANR final conference*

2023 **WIAS (Berlin)**, *SP2265 Phase transitions in spatial particle systems*

2022 **University of Innsbruck**, *Theory Colloquium (Physics department)*

2022 **Université Grenoble Alpes (France)**, *AMS–EMS–SMF meeting*

2019 **Banff (Canada)**, *Dimers, Ising model and their interactions*

2019 **University of Fribourg (CH)**, *Recent advances in loop models and height functions*

2019 **Les Diablerets (CH)**, *Workshop on statistical mechanics*

2018 **Oberwolfach**, *Strongly Correlated Random Interacting Processes*

2016 **University of Bath (UK)**, *Workshop on Random Interacting systems*

2015 **Les Diablerets (CH)**, *Workshop on statistical mechanics*

2013 **Simons Center at Stony Brook University (USA)**, *Random tilings*

Seminar talks

AUT **University of Vienna, TU Vienna**

CH **University of Geneva, EPFL**

DEN **University of Copenhagen**

FRA **IHES**

FIN **University of Helsinki**

GER **TU Darmstadt**

HUN/AUT **Budapest–Vienna probability seminar**

ISR **Tel Aviv University, Bar-Ilan University, Technion, Weizmann Institute**

POL **IMPAN, Warsaw**

RUS **PDMI Steklov, Chebyshev Lab at SPbSU, Ural Federal University**

SWE **Lund University**

US **Princeton, MIT, NYU, Rutgers, Cincinnati**

Contributed talks

2019 **Weizmann institute (Israel)**, *7th Students' Probability Day in Memory of Oded Schramm*

2017 **IMPA (Rio de Janeiro)**, *Brazilian School of Probability*

2015 **Oxford**, *Stochastic processes and applications*

2011 **St. Petersburg**, *First Russian–Finnish symposium on discrete mathematics*

Publications/Preprints

Selected works

- A. Glazman, M. Harel, N. Zelesko Planar percolation and the loop O(n) model (2025), 19pp, arXiv:2508.20917
- A. Glazman, P. Lammers, Delocalisation and Continuity in 2D: Loop O(2), Six-Vertex, and Random-Cluster Models (2023), 50pp, accepted to *Communications in Mathematical Physics* **(CMP)**, arXiv:2306.01527
- A. Glazman, I. Manolescu, Structure of Gibbs measures of planar FK-percolation and Potts model, *Probability and Mathematical Physics* **(PMP)**, Vol. 4 (2023), 46pp, doi:10.2140/pmp.2023.4.209

- H. Duminil-Copin, A. Glazman, R. Peled and Y. Spinka, Macroscopic loops in the loop $O(n)$ model at Nienhuis' critical point, *Journal of the European Mathematical Society* **(JEMS)**, 23 (2021), 39pp, doi:10.4171/JEMS/1012

The list of all publications and preprints

Link to all published publications: https://www.uibk.ac.at/mathematik/personal/glazman/

18. A. Glazman, M. Harel, N. Zelesko Planar percolation and the loop O(n) model (2025), 19pp, arXiv:2508.20917

17. M. Dober, A. Glazman, S. Ott Discontinuous transition in 2D Potts: I. Order-disorder interface convergence (2025), 75pp, arXiv:2502.04129

16. A. Glazman, L. Rey On loops in the complement to dimers (2024), 24pp, arXiv:2412.11708

15. A. Glazman, P. Lammers, Delocalisation and Continuity in 2D: Loop O(2), Six-Vertex, and Random-Cluster Models (2023), 50pp, accepted to *Communications in Mathematical Physics* **(CMP)**, arXiv:2306.01527

14. N. Crawford, A. Glazman, M. Harel, R. Peled, Macroscopic loops in the loop $O(n)$ model via the XOR trick, *Annals of Probability* **(AOP)**, Vol. 53 (2025), 31pp, doi:10.1214/24-AOP1712

13. Y. Aoun, M. Dober, A. Glazman, Phase diagram of the Ashkin-Teller model, *Communications in Mathematical Physics* **(CMP)**, Vol. 405 (2024), 33pp, doi:10.1007/s00220-023-04925-0

12. A. Glazman, I. Manolescu, Structure of Gibbs measures of planar FK-percolation and Potts model, *Probability and Mathematical Physics* **(PMP)**, Vol. 4 (2023), 46pp, doi:10.2140/pmp.2023.4.209

11. A. Glazman, R. Peled, On the transition between the disordered and antiferroelectric phases of the 6-vertex model *Electronic Journal of Probability* **(EJP)** (2023), 59pp, doi:10.1214/23-EJP980

10. A. Glazman, I. Manolescu, Exponential decay in the loop $O(n)$ model: $n > 1, x < \frac{1}{\sqrt{3}} + \varepsilon(n)$. *In and Out of Equilibrium 3: Celebrating Vladas Sidoravicius*, (2021), 13pp, doi:10.1007/978-3-030-60754-8_21

9. A. Glazman, I. Manolescu, Uniform Lipschitz functions on the triangular lattice have logarithmic variations. *Communications in Mathematical Physics* **(CMP)**, 381 (2021), 71pp, doi:10.1007/s00220-020-03920-z

8. A. Glazman, I. Manolescu, Self-avoiding walk on $\mathbb{Z}^2$ with Yang–Baxter weights: universality of critical fugacity and 2-point function. *Ann. Ins. Henri Poincaré* **(AIHP)**, 56 (2020), 25pp, doi:10.1214/19-AIHP1024

7. H. Duminil-Copin, A. Glazman, R. Peled and Y. Spinka, Macroscopic loops in the loop $O(n)$ model at Nienhuis' critical point, *Jounral of the European Mathematical Society* **(JEMS)**, 23 (2021), 39pp, doi:10.4171/JEMS/1012

6. D. Chelkak, A. Glazman, S. Smirnov, Discrete stress-energy tensor as a new observable for $O(n)$ model (2016), 61pp, arXiv:1604.06339

5. H. Duminil-Copin, A. Glazman, A. Hammond and I. Manolescu, On the probability that self-avoiding walk ends at a given point. *Annals of Probability* **(AOP)**, 44 (2016), 30pp, doi:10.1214/14-AOP993

4. A. Glazman, Connective constant for a weighted self-avoiding walk on $\mathbb{Z}^2$. *Electr. Comm. Prob.* **(ECP)**, 20 (2015), 13pp, doi:10.1214/ECP.v20-3844

3. A. Glazman, Generalized flowers in k-connected graphs. Part II,
Zapiski Nauchnykh Seminarov POMI, 417 (2013), 47pp,
translation in J. Math. Sci. (N.Y.), 204 (2015) doi:10.1007/s10958-014-2197-0

2. A. Glazman, A. Sivatski, D. Stolyarov and P. Zatitski, Forms of higher degree over certain fields,
Zapiski Nauchnykh Seminarov POMI, 394 (2011), 5pp,
translation in J. Math. Sci. (N.Y.), 188 (2013) translation in J. Math. Sci. (N.Y.)

1. A. Glazman, Generalized flowers in k-connected graphs,
Zapiski Nauchnykh Seminarov POMI, 391 (2011), 16pp,
translation in J. Math. Sci. (N.Y.), 184 (2012) doi:10.1007/s10958-012-0883-3

In preparation

- M. Dober, A. Glazman, S. Ott Discontinuous transition in 2D Potts: II. Order-order interface convergence and wetting

  Take the Potts model on an $N \times N$ box of $\mathbb{Z}^2$ under order-order Dobrushin boundary conditions: red on the upper half of the boundary and blue on the lower half of the boundary. We establish wetting phenomenon: emergence of a free intermediate layer of width $\sqrt{N}$ between the giant red and blue boundary clusters. Furthermore, we prove invariance principle: the boundaries of this intermediate layer converge to two Brownian bridges conditioned not to intersect.

Languages

fluent	English, Russian (native), French
B2-C1	German
A2-B1	Hebrew