

EMPLOYMENT

University assistant (postdoc), University of Vienna, Faculty of Mathematics, 10/2022-9/2024

Postdoctoral research and teaching in the Probability theory and mathematical finance group, associated with the chair for stochastics of Prof. Nathanaël Berestycki.

Postdoctoral researcher, École Normale Supérieure de Lyon, Laboratoire de Physique, 10/2020-9/2022

Postdoctoral research in mathematics/mathematical physics funded by a personal fellowship of LABEX MILYON centre of excellence (ANR-10-LABX-0070) and mentored by Jérémie Bouttier.

Researcher (since 8/2020 postdoctoral), University of Iceland, Science Institute, Mathematics division, 2/2020-9/2020

Postdoctoral research sponsored by Sigurður Örn Stefánsson within the project “Scaling limits of random enriched trees” funded by the Icelandic Research Fund (grant number:185233-051).

Doctoral student, University of Helsinki, Department of Mathematics and Statistics, 1/2015-1/2020

PhD research and studies under the supervision of Antti Kupiainen and Konstantin Izyurov in the mathematical physics group. Funded by the Academy of Finland via the CoE AnDy (project No. 271983), as well as the ERC Advanced Grant 741487 (QFPROBA), where Kupiainen was the PI.

VISITING POSITIONS

Scientist in residence, Institut Henri Poincaré (Paris), 1/2017-3/2017

Participation in the trimester *Combinatorics and Interactions*, 13 January – 31 March 2017

EDUCATION

Doctor of Philosophy (PhD), University of Helsinki, 2015-2020

Programme: Doctoral Programme of Mathematics and Statistics (DOMAST); *thesis:* ”On Ising Model Coupled to Random Planar Triangulations”, defended on 30 June 2020 with grade *Pass with Distinction*. Degree conferred on 8 September 2020.

Master of Science (MSc), University of Helsinki, 2013-2014

Major: mathematics; *master's thesis:* ”On random planar maps and their scaling limits”.

Bachelor of Science (BSc), University of Helsinki, 2010-2013

Major: mathematics; *minors:* theoretical physics, computer science.

PUBLICATIONS

Ising model on random triangulations of the disk: phase transition (with Linxiao Chen).

Commun. Math. Phys. **397**, 793–873 (2023). DOI: 10.1007/s00220-022-04508-5, arXiv:2003.09343.

Critical Ising model on random triangulations of the disk: enumeration and local limits (with Linxiao Chen). *Commun. Math. Phys.* **374**, 1577–1643 (2020). DOI: 10.1007/s00220-019-03672-5, arXiv:1806.06668.

PREPRINTS

Interfaces in the vertex-decorated Ising model on random triangulations of the disk. *Preprint.* arXiv:2003.11012.

ORGANIZATION OF SCIENTIFIC EVENTS

Path Integrals and Friends, University of Helsinki and Aalto University, 3-6 September 2024 (*co-organizer*), <https://www.helsinki.fi/en/conferences/path-integrals-and-friends>

Journée CombiTop (Journée Cartes, Maps Day), ENS de Lyon, 14 September 2021 (*co-organizer*), <https://indico.in2p3.fr/event/24704/>

SELECTED TALKS

Plane trees with a Wiener-Hopf factorization and an application to loop-decorated planar maps, Arbeitsgemeinschaft Diskrete Mathematik, Institute of Discrete Mathematics and Geometry, Vienna University of Technology (TU Wien), 25 June 2024 (*invited talk*)

A Wiener-Hopf factorization for planar maps coupled with the $O(n)$ loop model with mixed boundary conditions, Geometric and functional analysis seminar, Department of Mathematics and Statistics, University of Helsinki, 4 April 2024 (*invited talk*)

Random maps of the disk coupled with statistical physics models: enumeration and limits, Graz combinatorics seminar, Institute of Discrete Mathematics, TU Graz, 10 November 2023 (*invited talk*)

Statistical mechanics models on random lattices of the half-plane, Séminaire de physique mathématique, IPHT, Paris-Saclay, 13 June 2022 (*invited talk*)

Scaling limits of random planar maps with large faces and a causal structure, Mathematical physics seminar, Department of Mathematics and Statistics, University of Helsinki, 27 October 2021 (*invited talk*)

Ising model on random triangulations with a boundary, Rentrée de l'ANR DIMERS, Sorbonne Université, 28 September 2021 (*invited talk*)

Ising model on random half-planar triangulations: critical behavior, interfaces and phase transition, Journées Cartes, CIRM, 18 January 2021 (*invited talk*)

Ising model on random triangulations of the half-plane: critical behavior and phase transition, Integrable probability and related fields from a safe distance, Department of Mathematics, MIT, 29 October 2020 (*invited online talk*)

Ising model on random triangulations with a boundary: from combinatorics to geometry, Journée Cartes, Institut de Mathématiques d'Orsay, Université Paris-Saclay, 16 October 2020 (*invited talk*)

Critical Ising model on infinite random triangulation of the half-plane, Young Researchers Symposium at ICMP 2018, McGill University, 20 July 2018 (*contributed talk*)

Critical Ising model on random triangulations of the disk: enumeration and limits, RGM follow up, Isaac Newton Institute, Cambridge, 13 July 2018 (*contributed talk*)

Joonas Turunen
University of Vienna
Citizenship: Finnish

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Critical Ising model on infinite random triangulation of the half-plane, Mathematical physics seminar, University of Geneva, 16 October 2017 (*invited talk*)

Boltzmann triangulations with Ising model on faces, Stochastics and statistics seminar, Department of Mathematics and Systems Analysis, Aalto University, 3 October 2016 (*invited talk*)

Boltzmann triangulations with Ising model on faces, Mathematical physics seminar, Department of Mathematics and Statistics, University of Helsinki, 13 April 2016 (*invited talk*)

Full list of talks: <https://homepage.univie.ac.at/joonas.turunen>

TEACHING

Pedagogical training: University Pedagogy 2.1 Constructive Alignment in Course Design, University of Helsinki, 5 ECTS credits, 2/2018, grade 5/5.

Selected teaching:

Advanced probability theory, Faculty of Mathematics, University of Vienna, spring 2023 and spring 2024 (lecturer)

Functional analysis, Department of Mathematics and Statistics, University of Helsinki, fall 2019 (teaching assistant)

Probability theory I-II, Department of Mathematics and Statistics, University of Helsinki, fall 2018 (teaching assistant & substitute lecturer)

Stochastic methods, Department of Mathematics and Statistics, University of Helsinki, fall 2017 (teaching assistant & substitute lecturer, active participation in exercises design)

Stochastic methods in physics and biology, Department of Mathematics and Statistics, University of Helsinki, spring 2016 (teaching assistant, fully in charge of exercises design)

Thesis supervision:

Marcus Leivo, bachelor's thesis *Counting binary trees*, spring 2017

LANGUAGES

Finnish: mother tongue **English:** excellent **German:** fluent (B2/1, UniWien language centre) **Swedish:** intermediate **French:** intermediate

IT SKILLS

Programming: Matlab, Java, Python
Computer algebra: Maple, Mathematica

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COMPETITION SUCCESS, AWARDS AND GRANTS

Research grant from the Emil Aaltonen Foundation, 2024

Competitive grant of Mathematics and Science Fund of University of Helsinki for undergraduate students, 2013

National physics competition (Finland, high school), contestant in the finals (top 20), 2009

POSITIONS OF TRUST

Deputy member of the Department Council, Department of Mathematics and Statistics, University of Helsinki, 2014

OTHER RESEARCH EXPERIENCE

Intern, Finnish Meteorological Institute, 6-8/2013 (3 months)

I participated in a project on the interaction of carbon dioxide between the sea and the atmosphere. My main task was to collect, control and combine the weather data of a research journey with turbulence measurements conducted on board, using Matlab.