

**Joonas Turunen**  
University of Iceland  
University of Helsinki  
Citizenship: Finnish

Academic CV  
1 April 2020

## POSITIONS

### **Researcher, University of Iceland, Science Institute, Mathematic division, 2/2020-**

Postdoctoral research sponsored by Prof. Sigurður Örn Stefánsson within the project “Scaling limits of random enriched trees” funded by the Icelandic Research Fund.

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

Doctoral research in mathematics under the supervision of Prof. Antti Kupiainen and Prof. Konstantin Izyurov in the mathematical physics group. My thesis is about the geometry of random planar maps of the half-plane coupled to Ising model partition functions. It includes contributions to random geometry in the discrete level outside the pure gravity universality class, containing also some rigorous scaling limits which have interpretations in Liouville Quantum Gravity.

## EDUCATION

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

*Programme:* Doctoral Programme of Mathematics and Statistics (DOMAST); *general & subject studies* (60 credits) completed. Thesis under revision phase.

### **Master of Science, University of Helsinki, 2013-2014**

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

### **Bachelor of Science, University of Helsinki, 2010-2013**

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

## (PRE)PUBLICATIONS

### **Interfaces in the vertex-decorated Ising model on random triangulations of the disk, 2020.**

*Preprint.* arXiv:2003.11012.

### **Ising model on random triangulations of the disk: phase transition (with Linxiao Chen), 2020.**

*Preprint.* arXiv:2003.09343.

**Critical Ising model on random triangulations of the disk: enumeration and local limits** (with Linxiao Chen), 2019. *Commun. Math. Phys.* **374**, 1577–1643 (2020). DOI: 10.1007/s00220-019-03672-5, arXiv:1806.06668.

## TALKS

**Ising model on random triangulations of the half-plane**, Random Trees and Graphs Summer School, CIRM, 4 July 2019

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

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

**Introduction to two-dimensional random geometry**, Students' seminar, Department of Mathematics and Statistics, University of Helsinki, 9 November 2017

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

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

**Boltzmann triangulations with Ising model on faces**, 46<sup>th</sup> Probability Summer School Saint-Flour, Saint-Flour, 14 July 2016

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

**Introduction to analytic combinatorics**, Students' seminar, Department of Mathematics and Statistics, University of Helsinki, 11 February 2016

**A bijection between labelled plane trees and rooted and pointed planar quadrangulations**, Seminar on stochastic models, Department of Mathematics and Statistics, University of Helsinki, 5 March 2015

## **POSTER PRESENTATIONS**

**XIX International Congress on Mathematical Physics (ICMP 2018)**, Montréal, 23 – 28 July 2018

**RGM follow up**, Isaac Newton Institute, 9 – 13 July 2018

**A Mini-school on Random Maps and the Gaussian Free Field**, ENS Lyon, 15 – 19 May 2017

**Workshop on Enumerative Geometry**, IHP, 13 – 17 March 2017

**Combinatorics and interactions**, Introductory school at CIRM, 9 – 13 January 2017

## **RESEARCH VISITS**

**Institut Henri Poincaré**, Scientist in Residence during the trimester *Combinatorics and Interactions*, 13 January – 31 March 2017

## **PARTICIPATION IN CONFERENCES AND SCHOOLS**

**Random Trees and Graphs Summer School**, CIRM, 1 – 5 July 2019

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**Random maps and matrices from a geometric perspective**, ENS Lyon, 20 – 24 May 2019

**États de la recherche SMF : Statistical mechanics**, IHP, 10-14 December 2018

**Celebration of Mathematics: 150 Years of the Finnish Mathematical Society**, University of Helsinki, 30 November – 2 December 2018

**XIX International Congress on Mathematical Physics (ICMP 2018) and Young Researchers Symposium**, Montréal, 20 – 28 July 2018

**RGM follow up**, Isaac Newton Institute, 9 -13 July 2018

**Dynamics on Random Graphs and Random Maps**, CIRM, 23 -27 October 2017

**A Mini-school on Random Maps and the Gaussian Free Field**, ENS Lyon, 15 -19 May 2017

**Combinatorics and interactions**, CIRM & IHP, 9 January – 31 March 2017

**Quantum integrable systems, conformal field theories and stochastic processes**, Institut d'Études Scientifiques de Cargèse, 12 -23 September 2016

**The 26<sup>th</sup> Jyväskylä Summer School**, University of Jyväskylä, 8 -19 August 2016

**46<sup>th</sup> Probability Summer School Saint-Flour**, Saint-Flour, 3 -15 July 2016

**The Helsinki Workshop on Quantum Gravity**, University of Helsinki, 1 -3 June 2016

**Random processes and random media: a conference on the occasion of Alain-Sol Sznitman's 60<sup>th</sup> birthday**, ETH Zürich, 11 -15 January 2016

**Meeting for young mathematicians in Finland**, Aalto University, 26 -28 August 2015

**Summer school: Stochastic processes and random matrices**, École de Physique des Houches, 6 -31 July 2015

**20<sup>th</sup> Itzykson conference: Random Surfaces and Random Geometry**, CEA Saclay, 10 -12 June 2015

## TEACHING

**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)

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**Stochastic methods in physics and biology**, Department of Mathematics and Statistics, University of Helsinki, spring 2016 (teaching assistant)

**Linear algebra and differential equations**, Department of Mathematics and Systems Analysis, Aalto University, fall 2013 (teaching assistant)

## THESIS SUPERVISION

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

## LANGUAGE SKILLS

**Finnish:** mother tongue    **English:** excellent    **German:** fluent    **Swedish:** fluent  
**French:** basics

## IT SKILLS

**Programming:**            Matlab, Java  
**Mathematical writing:**    LaTeX  
**Computer algebra:**        Maple

## COMPETITION SUCCESS, AWARDS AND GRANTS

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

**VII Estonian-Finnish Olympiad in Physics**, contestant, 2009

**National physics competition (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 completed a full-time internship, in which 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.