



Dominik Schröder

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Education

Maria-Theresia-Gymnasium

ABITUR / A-LEVELS

Munich

2001 – 2010

ETH Zurich

MATHEMATICS & PHYSICS

Zurich

2010 – 2011

LMU Munich

MATHEMATICS & PHYSICS

Munich

2011 – 2014

- **BSc in Mathematics.** Final grade *1.08*
Thesis “The Integrated Density of States of Random Schrödinger Operators” supervised by Peter Müller.
- **MSc in Theoretical and Mathematical Physics.** Final grade *1.0 with distinction*
Thesis “Phase Transition in the Density of States of Quantum Spin Glasses” supervised by László Erdős.

University of Cambridge

MATHEMATICS

Cambridge

2014 – 2015

- **MASt in Mathematics.** Final grade *distinction*
Essay “Interlacing Families and the Kadison-Singer Problem” supervised by Timothy Gowers.

IST Austria

MATHEMATICS

Vienna

Sep 2015 – Mar 2019

- **PhD in Mathematics** supervised by László Erdős.

Positions

Bosch Center for Artificial Intelligence

INDUSTRY SABBATICAL

Renningen

Apr 2018 – Aug 2018

IST Austria

POSTDOC

Wien

Mar 2019 – Sep 2019

ETH Institute for Theoretical Studies

JUNIOR FELLOW

Zurich

from Oct 2019

Publications

Phase Transition in the Density of States of Quantum Spin Glasses

WITH LÁSZLÓ ERDŐS

2014

Math. Phys. Anal. Geom. 17 (2014), no. 3-4, 441–464.

arXiv1407.1552, MR3291938, doi:10.1007/s11040-014-9164-3.

Fluctuations of Rectangular Young Diagrams of Interlacing Wigner Eigenvalues

WITH LÁSZLÓ ERDŐS

2016

Int. Math. Res. Not. IMRN 2018, no. 10, 3255–3298.

arXiv1608.05163, MR3805203, doi:10.1093/imrn/rnw330.

- Fluctuations of Functions of Wigner Matrices** 2016
 WITH LÁSZLÓ ERDŐS
Electron. Commun. Probab. Volume 21 (2016), paper no. 86.
 arXiv1610.07084, MR3600514, doi:10.1214/16-ECP38.
- Random Matrices with Slow Correlation Decay** 2017
 WITH LÁSZLÓ ERDŐS AND TORBEN KRÜGER
Forum of Mathematics, Sigma, 7, E8.
 arXiv1705.10661, MR3941370, doi:10.1017/fms.2019.2.
- Correlated Random Matrices: Band Rigidity and Edge Universality** 2018
 WITH JOHANNES ALT, LÁSZLÓ ERDŐS AND TORBEN KRÜGER
Ann. Probab. 48 (2020), no. 2, 963–1001.
 arXiv1804.07744, MR4089499, doi:10.1214/19-AOP1379.
- Cusp Universality for Random Matrices I: Local Law and the Complex Hermitian Case** 2018
 WITH LÁSZLÓ ERDŐS AND TORBEN KRÜGER
Comm. Math. Phys. 378 (2020), no. 2, 1203–1278.
 arXiv1809.03971, MR4134946, doi:10.1007/s00220-019-03657-4.
- Cusp Universality for Random Matrices II: The Real Symmetric Case** 2018
 WITH GIORGIO CIPOLLONI, LÁSZLÓ ERDŐS AND TORBEN KRÜGER
Pure Appl. Anal. 1 (2019), no. 4, 615–707.
 arXiv1811.04055, MR4026551, doi:10.2140/paa.2019.1.615.
- Optimal Lower Bound on the Least Singular Value of the Shifted Ginibre Ensemble** 2019
 WITH GIORGIO CIPOLLONI AND LÁSZLÓ ERDŐS
Probability and Mathematical Physics Vol. 1 (2020), No. 1, 101–146.
 arXiv1908.01653, doi:10.2140/pmp.2020.1.101.
- Edge Universality for non-Hermitian Random Matrices** 2019
 WITH GIORGIO CIPOLLONI AND LÁSZLÓ ERDŐS
Probab. Theory Related Fields 179 (2021), no. 1-2, 1–28.
 arXiv1908.00969, MR4221653, doi:10.1007/s00440-020-01003-7.
- Central Limit Theorem for Linear Eigenvalue Statistics of non-Hermitian Random Matrices** 2019
 WITH GIORGIO CIPOLLONI AND LÁSZLÓ ERDŐS
Comm. Pure Appl. Math. (2021)
 arXiv1912.04100, doi:10.1002/cpa.22028.
- Fluctuation Around the Circular Law for Random Matrices with Real Entries** 2020
 WITH GIORGIO CIPOLLONI AND LÁSZLÓ ERDŐS
Electron. J. Probab. 26 (2021), Paper No. 24, 61 pp.
 arXiv2002.02438, MR4235475, doi:10.1214/21-EJP591.
- Eigenstate Thermalization Hypothesis for Wigner Matrices** 2020
 WITH GIORGIO CIPOLLONI AND LÁSZLÓ ERDŐS
Comm. Math. Phys. 388 (2021), no. 2, 1005–1048.
 arXiv2012.13215, MR4334253, doi:10.1007/s00220-021-04239-z.
- Functional Central Limit Theorems for Wigner Matrices** 2020
 WITH GIORGIO CIPOLLONI AND LÁSZLÓ ERDŐS
Submitted.
 arXiv2012.13218.

- Thermalisation for Wigner Matrices** 2021
 WITH GIORGIO CIPOLLONI AND LÁSZLÓ ERDŐS
J. Funct. Anal. 282 (2022), no. 8, Paper No. 109394, 37 pp.
 arXiv2102.09975, MR4372147, doi:10.1016/j.jfa.2022.109394.
- Normal Fluctuation in Quantum Ergodicity for Wigner Matrices** 2021
 WITH GIORGIO CIPOLLONI AND LÁSZLÓ ERDŐS
Accepted for publication in Ann. Probab.
 arXiv2103.06730.
- On the Condition Number of the Shifted Real Ginibre Ensemble** 2021
 WITH GIORGIO CIPOLLONI AND LÁSZLÓ ERDŐS
Submitted.
 arXiv2105.13719.
- Density of Small Singular Values of the Shifted Real Ginibre Ensemble** 2021
 WITH GIORGIO CIPOLLONI AND LÁSZLÓ ERDŐS
Accepted for publication at Ann. Henri Poincaré
 arXiv2105.13720.
- Analysis of one-hidden-layer Neural Networks via the Resolvent Method** 2021
 WITH VANESSA PICCOLO
NeurIPS 2021.
 arXiv2105.05115, papers.nips.cc.
- Quenched Universality for Deformed Wigner Matrices** 2021
 WITH GIORGIO CIPOLLONI AND LÁSZLÓ ERDŐS
Submitted
 arXiv2106.10200.
- On the Spectral Form Factor for Random Matrices** 2021
 WITH GIORGIO CIPOLLONI AND LÁSZLÓ ERDŐS
Submitted
 arXiv2109.06712.
- Optimal multi-resolvent local laws for Wigner matrices** 2021
 WITH GIORGIO CIPOLLONI AND LÁSZLÓ ERDŐS
Submitted
 arXiv2112.13693.
- Rank-uniform local law for Wigner matrices** 2022
 WITH GIORGIO CIPOLLONI AND LÁSZLÓ ERDŐS
Submitted
 arXiv2203.01861.

Invited talks

- IAS Park City Mathematics Institute** Park City
 PCMI SUMMER SCHOOL. POSTER PRESENTATION 2017
- University of Warwick** Warwick
 PROBABILITY SEMINAR 2017
- TU Munich** Munich
 SEMINAR *ANALYSIS AND ZUFALL* 2018

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| University of Vienna | <i>Vienna</i> |
| PROBABILITY SEMINAR | 2018 |
| University of Basel | <i>Basel</i> |
| PROBABILITY SEMINAR | 2018 |
| Random Physical Systems | <i>Puerto Natales, Chile</i> |
| CONFERENCE | 2018 |
| University of Geneva | <i>Les Diablerets, Switzerland</i> |
| WORKSHOP ON STATISTICAL MECHANICS | 2019 |
| Institut Henri Poincaré | <i>Paris</i> |
| WORKING GROUP ON RANDOM MATRICES AND GRAPHS | 2019 |
| KTH Royal Institute of Technology | <i>Stockholm</i> |
| RANDOM MATRIX THEORY SEMINAR | 2019 |
| QMath14 | <i>Aarhus</i> |
| RANDOM SYSTEMS SESSION | 2019 |
| University of Geneva | <i>Geneva</i> |
| MATHEMATICAL PHYSICS SEMINAR | 2019 |
| University of Erlangen | <i>Erlangen</i> |
| MATHEMATICAL PHYSICS SEMINAR | 2019 |
| MFO Oberwolfach | <i>Oberwolfach</i> |
| WORKSHOP RANDOM MATRICES | 2019 |
| University of Melbourne | <i>Melbourne</i> |
| RANDOM MATRIX THEORY SEMINAR | 2020 |
| Universität Basel, Schweiz | <i>Basel</i> |
| MACHINE LEARNING SEMINAR | 2020 |
| ICMP (International Congress on Mathematical Physics) | <i>Geneva</i> |
| CONTRIBUTED TALK, SESSION PROBABILITY & RANDOM STRUCTURES | 2021 |

Teaching experience

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|---|--------------------|
| Teaching assistant | <i>LMU Munich</i> |
| ANALYSIS, MEASURE THEORY, PROBABILITY, FUNCTIONAL ANALYSIS, STATISTICAL PHYSICS | 2012 – 2015 |
| Teaching assistant | <i>IST Austria</i> |
| RANDOM MATRIX THEORY | 2017 – 2018 |
| Supervision of master and semester theses | <i>ETH Zurich</i> |
| MACHINE LEARNING, RANDOM MATRIX THEORY | since 2020 |

Grants & Awards

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|-------------|---|--------------------------------|
| 2010 – 2015 | German National Academic Foundation, Scholarship | |
| 2015 | Horne Prizes for Physical Sciences, Clare College | <i>University of Cambridge</i> |
| 2015 – 2017 | IST Austria Excellence Scholarship | <i>IST Austria</i> |

Language skills

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|----------------|---------------|
| German | Mother tongue |
| English | Fluent |
| French | Basic |
| Spanish | Basic |