Education

- Jan.2020- Sep.2023 Ph.D. QMATH, University of Copenhagen, Supervisor: Albert H. Werner. *Thesis: Random Problems in Mathematical Physics.* Research stays with Simone Warzel at TU-Munich.

- 2017-2019: M.Sc. Mathematics, University of Copenhagen, GPA: 12/12. Two exchange semesters on ETH Zürich specialising in mathematical physics.
  Thesis: *Exponential decay of truncated correlation functions for the 2d-Ising model at the critical temperature.*
  Supervision: Aran Raoufi and Wendelin Werner, ETH Zürich.

- 2016-2017: B.Sc. Physics, University of Copenhagen (some courses transferred from math),
  GPA of additional courses: 12/12.

- 2013-2016: B.Sc. Mathematics, University of Copenhagen. GPA: 11.7/12. Exchange semester at LMU Munich, 2015. Thesis: *Causal structure in General relativity.*

Employment

- Postdoc, Department of Mathematical Sciences, University of Copenhagen, Jul 2023-

  Continuing research as well as lecturing the 3rd semester course "Mathematical Analysis".

- PhD Student, Department of Mathematical Sciences, University of Copenhagen, Jan 2020-Jul 2023

  Research, PhD and postdoc representative in the Department Collaboration Committee, courses in complexity and machine learning, teaching the freshman project on quantum information theory twice, supervision of two master's students (Boris Kjær, Mie Glückstadt) on statistical mechanics.

- Scientific Assistant, Department of Mathematical Sciences, University of Copenhagen, nov-dec 2019.

- Member of the working group of the Danish Mathematical Olympiad (Dec) 2015-
  (Correcting tests, posing problems, teaching on training camps, fundraising, organization development and leading the Danish Team in IMO 2017, 2018 and Baltic Way 2015-2020).

- Trading Intern, Jane Street, London, (Jul-Sep) 2022.
  Financial training and data analysis in Python and Excel.

- Teaching Assistant, University of Copenhagen (Sep 2014)-(Jul 2018).
  Introduction to Mathematics, Linear Algebra (x 3), Complex Analysis, Analysis 0 (x 2), Geometry 1, Electrodynamics, Analysis 2, Measure and Integration Theory, Statistical Physics.

- Consulting Intern, McKinsey & Company, Copenhagen, (May-Jun) 2016.

- Astronomy Guide, Tycho Brahe Planetarium (Mar 2014)-(Aug. 2016).
  (Explaining astronomy to the public by public shows, guided tours, lectures for school kids etc.)

- Badminton Coach, Charlottenlund Badmintonklub (Sep 2007)-(Jul 2012).

Awards

- 1st. prize: China Adolescent Science and Technology Innovation Contest, 2014.

- 1st. prize: Physical Science, Young Scientists Denmark, 2014.

- Bronze medal, International Physics Olympiad (IPhO), 2013.

- Honorable Mention, International Mathematical Olympiad (IMO), 2013.

- 1st: The Danish Physics Olympiad 2013.

- 2nd: Danish Mathematical Olympiad (Georg Mohr-Konkurrencen), 2013.

Volunteer Work

- Member of the pre-selection jury 2016-2023 and the final jury 2017-2023, consultant prior to the final 2017-2018, Young Scientists Denmark.

- Correcting the Danish Physics Olympiad 2014 and teaching at the Danish Physics Olympiad 2015.

- The Danish Youth Association of Science 2011 - 2014.
  (Arranging lectures, excursions, a one week Math Camp 2014 as well as planning and teaching a workshops on classical geometry and olympiad mathematics.)

Scientific Talks

- Phase transitions for graphical representations of the Ising model using the uniform even subgraph, Cambridge, UK, 11/7-2023.

- Phase transitions for graphical representations of the Ising model, Chalmers, Sweden, 10/17-2023.

- Two-tier electoral systems, the Danish election in 2022, unclarities and impossibility results, QMATH, Copenhagen 12/21-2022.

- Spectra of translation-invariant Lindbladians in infinite volume, QMATH, Copenhagen 6/1-2022.

- Single particle open quantum systems in one dimension: dissipation and disorder imply decoherence, Oberseminar, TU Munich, 11/15-2022.

- Critical exponents for the Ising model in a magnetic field with random currents, QMATH, Copenhagen, 9/4-2020.

- Percolation Today: Critical exponent of 2D Ising model in a magnetic field using random currents, Online Seminar, 6/15-2021.

- Critical exponent for the Ising model in a magnetic field with RSW, summer school on Current Topics in Mathematical Physics, 7/20-2021.

- QMATH tracks the spread of Danish Coronavirus from genetic data, Data@Breakfast, Online, South Africa. 6/19-2020.

Outreach Talks [Copenhagen]

- Tea with a researcher: The Ising model its the phase transition, 11/3-23.

- Culture night: Spritny matematisk forskning forklaret med billeder. 10/13-23

- Panel member: Future of humanity, 6/20-23

- KU karrieredag: At skrive en PhD. 5/11-23

- Culture night: Hvad kan en kvantecomputer gøre for dig? 10/14-22

- Why Quantum Computing is fundamentally different, UCAPS Late night PhD talks. 2/24-22

- Gamma: Fra spectra til kvantefysik. 11/30-21

- Pitching the poster: "Quantum Computing is fundamentally different" to: Margrethe Vestager 2/22-22, staff of the American embassy 3/22-22, group from the ministry of education 2/21-22, senior staff from Novo Nordisk 11/1-22, Board of the Danish Quantum Community, 12/14-22, Public Audience 6/11-22,

Personal Information

Contact: frederik.ravn.klausen@gmail.com, `http://frederikravnklausen.github.io`
Citizenship: Danish, Year of birth: 1994.
Languages: Danish (native), English (fluent), German (fluent)
Programming: Python (operational), R (intermediate).

List of Publications

Preprints

- **FRK**, S.Warzel. Exponential decay of coherences in open quantum systems arXiv 2310.09880, 2023

- D. Harley, I. Datta, **FRK**, A.Bluhm, D.S.França, A.Werner, M.Christandl. Going Beyond Gadgets: The Importance of Scalability for Analogue Quantum Simulators arXiv 2306.13739, 2023

- U.Hansen, B.Kjær, **FRK**. The Uniform Even Subgraph and Its Connection to Phase Transitions of Graphical Representations of the Ising Model arXiv 2306.05130, 2023

- **FRK**, A. Werner. Spectra of Lindbladians on the infinite line: From non-Hermitian to full evolution via tridiagonal Laurent matrices, arXiv: 2206.09879, 2022

Published

- **FRK**, A. Lauritzen. A stochastic cellular automaton model of culture formation, Phys.Rev.E 108,054307,2023.

- U.Hansen, **FRK**. Strict monotonicity, continuity and bounds on the Kertész line for the random-cluster model on $\mathbb{Z}^d$, Journal of Mathematical Physics, 2023.

- **FRK**, A.Raoufi. Mass scaling of the near-critical 2D Ising model using random currents, Journal of Statistical Phyiscs, 2022.

- **FRK**. On monotonicity and couplings of random currents and the loop-$O(1)$-model, 2022, ALEA. Latin American Journal of Probability and Mathematical Statistics.

- A. Bluhm, M.Christandl, F. Gesmundo, **FRK**, L. Mančinska, V. Steffan, D.S.França, A. Werner. SARS-CoV-2 transmission routes from genetic data: A Danish case study, 2020, PloS one.

- P. Jensen, **FRK**, P.Rasmussen. Combinatorial classification of quantum lens spaces, 2018, Pacific Journal of Mathematics.

- S. Holdum, **FRK**, P.Rasmussen. Powers in Prime Bases and a Problem on the Central Binomial Coefficient, 2014, Integers: Electronic Journal of Combinatorial Number Theory.

- S. Holdum, **FRK**, P.Rasmussen. On a Conjecture on the Representation of Positive Integers as the Sum of Three Terms of the Sequence $\left\lfloor \frac{n^2}{a} \right\rfloor$, 2014, The Journal of Integer Sequences.

Apart from that I have written various non technical papers and contributions to public debate such as:
Matematikere afslører smitteveje med corona, Aktuel Naturvidenskab, 2020
Danmark var vært for Baltic Way 2017, on behalf of Georg Mohr-Konkurrencen LMFK-bladet, 2018.
Meditation over midterbinomialkoefficienten, with Peter M. R. Rasmussen in FAMØS, 2015
Fysik i Olympiadeklassen, Aktuel Naturvidenskab, 2013
Talentfulde studenter må ikke glemme fællesskabet, Politiken, 2012