

# Carla Rubiliani

Departement of Mathematics  
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Current position: PhD student at University of Tübingen

## Education

Ph.D.	Mathematics Advisor: Marius Lemm	University of Tübingen	09/2023 - present
M.S.	Mathematical Physics	University of Tübingen	2021-2023
B.S.	Mathematics	University of Milano	2017-2020

## Publications

2025 - "A ballistic upper bound on the accumulation of bosonic on-site energies", [arxiv](#)  
T. Kuwahara, M. Lemm, C. Rubiliani

2025 - "Spectral Small-Incremental-Entangling: Breaking Quasi-Polynomial Complexity Barriers in Long-Range Interacting Systems", [arxiv](#)  
D. Kim, Y. Kimura, H. Mackay, Y. Mitsuhashi, H. Nishikawa, C. Rubiliani, C. Shang, A. Ukai, T. Kuwahara

2025 - "On the quantum dynamics of long-ranged Bose-Hubbard Hamiltonians", [arxiv](#)  
M. Lemm, C. Rubiliani, J. Zhang

2023 - "On the microscopic propagation speed of long-range quantum many-body systems", [arxiv](#)  
M. Lemm, C. Rubiliani, J. Zhang

2023 - "Information propagation in long-range quantum many-body systems", [arxiv article](#)  
M. Lemm, C. Rubiliani, I. M. Sigal, and J. Zhang

## Grants and Scholarships

SS 2025, 5 months research stay in the lab of Tomotaka Kuwahara as International Research Associate. The stay was funded partly by RIKEN : accomodation + 780000¥ (around 4500€ at the time)

## Awards

2025, Best Ph.D. Research Paper within Collaborative Research Center "*Mathematics of Many-Body Quantum Systems and Their Collective Phenomena*" CRC TRR 352, a project connecting the University of Tübingen with LMU and TUM in Munich counting more than 20 PIs

## Teaching Experience

### Mathematical Statistical Physics

SS 2024

Teaching Assistant, at University of Tübingen, Mathematics department

### Physics 1

WS 2022

Teaching Assistant, at University of Tübingen, Physics department

## Research visits

07/2025 **Hokkaido University**, Sapporo (Japan) visiting Tadahiro Miyao, (1 week)

05/2025 **Yukawa Institute for Theoretical Physics**, Kyoto (Japan), visiting Tan Van Vu, (1 week)

02/2025 **Oberwolfach** (Germany), talk at the workshop '*New Directions in Correlated Quantum Systems*' (1 week)

08/2023 **Harvard University** (USA), talk at the workshop '*Locality and complexity in quantum thermal equilibrium*', (2 weeks)

## Talks

### Invited Talks

10/2025 *Mind the Gap*, Kochel am See (Germany)

06/2025 *International Symposium on Analysis and Quantum Physics*, Sanya (China)

### Conference Talks

09/2025 *2nd DPG Fall Meeting: 100 Years of Quantum Physics*, Göttingen (Germany)

09/2025 *QMATH16*, Munich (Germany)

12/2024 *Correlations of quantum many-body systems*, University of Tübingen (Germany)

08/2024 *Quantissima in the Serenissima V*, Venice (Italy)

07/2024 *Young Researcher Symposium*, Strasbourg (France)

### Seminar Talks

12/2025 *PDE and mathematical physics seminar*, University of Zurich (Switzerland)

12/2025 *Lattice Seminar*

07/2025 *Probability Seminar*, Seoul National University, Seoul (Korea)

**12/2024** *Junior Analysis and Probability Seminar* University of Warwick (UK)

**11/2023** *Oberseminar Mathematische Physik* University of Tübingen (Germany)

**05/2023** *Mathematical Physics Colloquium*, University of Tübingen (Germany)

## **Service Activities**

2023-present, member of SFB Junior Committee within the Collaborative Research Center TRR 352 "*Mathematics of Many-Body Quantum Systems and Their Collective Phenomena*"

### **Organized Meetings**

**01/2025** *Junior SFB meeting*, Stuttgart (Germany)

**12/2023** *Junior SFB meeting*, Herrsching am Ammersee (Germany)

### **Organized Seminars**

**2024** Monthly junior SFB coffee meetings

### **Referee Service**

Referee service for Physical Review Letters

## **Attended Conferences, Workshops, and Summer Schools**

**01/2026** *QIP*, Riga, Latvia (poster)

**07/2025** *Discover Evening*, RIKEN, Japan (poster)

**03/2025** *TRR 352 Winter School*, summer school, Kochel am See, Germany

**08/2024** *Rigorous Renormalization Group Analysis of Collective Phenomena in Fermionic Quantum Systems*, summer school, Como, Italy (poster)

**07/2025** *ICMP*, congress, Strasbourg, France

**05/2024** *PDE in Physics and Material Science*, workshop, University of Herakleion, Greece

**11/2023** *Topological Order*, workshop, University of Tübingen, Germany

**08/2023** *Current Topics in Mathematical Physics*, summer school at University of Warsaw, Poland

**07/2023** *Infinite Dimensional Quantum Markov Semigroups*, workshop at University of Tübingen, Germany

## **Language**

Native Italian, fluent English, basic German, and trying my best with Japanese