

# Andreas Bluhm

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## Curriculum Vitae

### Personal details

Name **Andreas Bluhm**  
Birth **April 5, 1990 in Kiel, Germany**  
Nationality **German**  
Affiliation **Université Grenoble Alpes, CNRS, Grenoble INP, LIG**  
Address **CS 40700 - 38058 Grenoble Cedex 9**  
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### Research interests

Quantum information theory, quantum spin systems

### Research experience

01/11/2022 - **Research scientist**, *LIG, CNRS, Grenoble INP, Université Grenoble Alpes*, Grenoble, France  
present

01/09/2019 - **Postdoctoral researcher**, *QMATH, Department of Mathematical Sciences, University of Copenhagen*, Copenhagen, Denmark  
31/08/2022 Mentor: Prof. Matthias Christandl

01/10/2015 - **Research assistant**, *Department of Mathematics, Technical University of Munich*, Munich,  
31/08/2019 Germany

### Academic qualifications

01/10/2015 - **Doctoral studies in Mathematics**, *Technical University of Munich*, Munich, Germany. PhD  
31/08/2019 awarded on 01/08/2019  
Thesis: Compression and measurements in quantum information theory  
Advisor: Prof. Michael M. Wolf

01/10/2013 - **Master's degree in Theoretical and Mathematical Physics**, *Ludwig Maximilian University of Munich*, Munich, Germany  
30/09/2015 Thesis: On the area law for the entropy of entanglement for gapped systems  
Supervisor: Prof. Sven Bachmann

01/10/2010 - **Bachelor's degree in Physics**, *University of Rostock*, Rostock, Germany  
30/09/2013 Thesis: The separability eigenvalue problem for bound entangled states  
Supervisor: Dr. Jan Sperling

01/09/2012 - **Exchange semester**, *Université Bordeaux I*, Bordeaux, France  
31/01/2013 Erasmus program

17/06/2009 **Abitur (German high school diploma)**, *Hebbelschule Kiel*, Kiel, Germany

### Selected research stays

17/11/2025 **Dr. Marc-Olivier Renou's group**, *Inria Paris Saclay*, Paris, France. One week

16/06/2025 **Dr. René Schwonnek**, *Leibniz University Hannover*, Hannover, Germany. One week

12/05/2025 **Prof. Florian Speelman's group**, *University of Amsterdam*, Amsterdam, Netherlands. One week

20/01/2025 **Prof. Marius Lemm's group**, *University of Tübingen*, Tübingen, Germany. One week

11/11/2024 **JProf. Ramona Wolf's group**, *University of Siegen*, Siegen, Germany. One week

11/03/2024 **Prof. Renato Renner's group**, *ETH Zurich*, Zurich, Switzerland. One week

04/12/2023 **Prof. Karol Życzkowski's group**, *Jagiellonian University*, Krakow, Poland. One week

13/11/2023 **JProf. Ángela Capel**, *University of Tübingen*, Tübingen, Germany. One week

09/10/2023 **Prof. Igor Klep**, *University of Ljubljana*, Ljubljana, Slovenia. One week

22/05/2023 **Dr. Cambyse Rouzé**, *Technical University of Munich*, Munich, Germany. One week

13/02/2023 **Dr. Ion Nechita and Dr. Victor Magron**, *Université Paul Sabatier and LAAS-CNRS*, Toulouse, France. Two weeks

18/04/2022 **Dr. Ion Nechita**, *Université Paul Sabatier*, Toulouse, France. One week

27/09/2021 **Prof. Michael M. Wolf's group**, *Technical University of Munich*, Munich, Germany. One week

14/10/2019 **Prof. Nilanjana Datta's group**, *University of Cambridge*, Cambridge, UK. One week

11/02/2019 **Dr. Omar Fawzi's group**, *École Normale Supérieure de Lyon*, Lyon, France. One week

19/11/2018 **Dr. Ion Nechita**, *Université Paul Sabatier*, Toulouse, France. One week

15/10/2018 **Dr. Marcus Huber's group**, *IQOQI*, Vienna, Austria. One week

09/07/2018 **Prof. Maria Jivulescu**, *Universitatea Politehnica*, Timișoara, Romania. One week

04/06/2018 **Prof. David Pérez-García's group**, *Universidad Complutense*, Madrid, Spain. One week

01/09/2017 - 17/12/2017 **Trimester on Analysis in Quantum Information Theory**, *Institut Henri Poincaré*, Paris, France

## Grants and scholarships

15/12/2025 **Springboard programme grant of the British Council France**  
Grant of 5,000€ until the end of 2026 to prepare future joint project submissions of researchers in France and the UK. Project: *Certifying quantum devices: Testing quantum evolutions and thermal states*

10/08/2025 **Research in Teams at the Banff International Research Station**  
Grant for 2 weeks research stay in Banff, Alberta, Canada

01/10/2025 **JCJC grant of the French National Research Agency (ANR)**  
Research grant for young researchers of 320 000€ until end of 2029. Project: *Practical quantum position verification (PraQPV)*

30/07/2023 **Short Research Stays at the SwissMAP Research Station**  
Grant for 2 weeks research stay in Les Diablerets, Switzerland

16/05/2023 **Research Initiatives at Grenoble Alpes (IRGA)**  
Research grant of 11 000€ until end of 2024. Project: *Non-commutative polynomial optimization methods for quantum information theory (POQIT)*

18/02/2019 **Wilhelm and Else Heraeus-Foundation**  
Travel grant for the DPG spring meeting

13/02/2017 **Wilhelm and Else Heraeus-Foundation**  
Travel grant for the DPG spring meeting

01/05/2014 - 30/09/2015 **Scholarship “Max-Weber-Programm” (Scholarship awarded by the state of Bavaria, Germany)**

01/02/2011 - 30/09/2015 **Scholarship “Studienstiftung des Deutschen Volkes” (German National Academic Foundation)**

## Prizes

12/06/2023 **LAA Early Career Speaker**  
at the 25th workshop of the International Linear Algebra Society in Madrid, Spain

## Conferences and workshops

upcoming **29th Annual Conference on Quantum Information Processing, Heisenberg-limited Hamiltonian learning continuous variable systems via engineered dissipation:**, Riga, Latvia

12/11/2025 **3rd Colloquium of the GdR TeQ Quantum Technologies, Efficient learning and simulation of quantum continuous variable systems**, Grenoble, France

10/07/2025 **Workshop “Mathematics of quantum information”, Towards a complexity theory for non-local quantum computation**, Aachen, Germany, invited

12/03/2025 **828. WE-Heraeus-Seminar “Operator Theory and Polynomial Optimization in Quantum Information Theory”, Computing noise robustness of incompatible quantum measurements**, Bad Honnef, Germany

18/12/2024 **Workshop “Correlations of quantum many-body systems”, Strong decay of correlations for Gibbs states in any dimension**, Tübingen, Germany

12/09/2024 **19th Conference on the Theory of Quantum Computation, Communication and Cryptography, Hamiltonian Property Testing**, Okinawa, Japan

12/09/2024 **19th Conference on the Theory of Quantum Computation, Communication and Cryptography, Dissipation-enabled bosonic Hamiltonian learning via new information-propagation bounds**, Okinawa, Japan, talk given by coauthor Tim Möbus

22/08/2024 **26th International Symposium on Mathematical Theory of Networks and Systems, Computing noise robustness of incompatible quantum measurements**, Cambridge, UK, invited

05/07/2024 **XXI International Congress on Mathematical Physics, Hamiltonian Property Testing**, Strasbourg, France

09/05/2024 **Workshop “Towards Infinite Dimension and Beyond in Quantum Information”, Unified framework for continuity of sandwiched Rényi divergences**, Granada, Spain, invited

19/01/2024 **27th Annual Conference on Quantum Information Processing, Towards a unification of different measures of correlations and locality in Gibbs states**, Taipei, Taiwan, talk given by coauthor Ángela Capel

18/01/2024 **27th Annual Conference on Quantum Information Processing, Making existing quantum position verification protocols secure against arbitrary transmission loss**, Taipei, Taiwan, talk given by coauthor Philip Verduyn Lunel

17/01/2024 **27th Annual Conference on Quantum Information Processing, Going beyond gadgets: The importance of scalability for analogue quantum simulators**, Taipei, Taiwan, talk given by coauthor Dylan Harley

09/01/2024 **Conference “Quantum Information Theory and Free Probability”, Quantifying the incompatibility of quantum measurements**, Abu Dhabi, United Arab Emirates, invited

02/10/2023 **QuantAlps Days 2023, Secure quantum position verification**, Grenoble, France, invited

21/09/2023 **Workshop “Advances in quantum position verification”, Making existing quantum position verification protocols secure against arbitrary transmission loss**, Waterloo, Ontario, Canada, invited

13/07/2023 **Workshop “The multiple facets of quantum cloning”, Programmability of covariant quantum channels**, Toulouse, France, invited

12/06/2023 **25th workshop of the International Linear Algebra Society, Free spectrahedra in quantum information theory**, Madrid, Spain, invited

14/02/2023 **Scientific day Quantum IMT-LAAS-LPT, Matrix convex sets in quantum information theory: Measurement compatibility and beyond**, Toulouse, France, invited

24/10/2022 **QInfo day, Position-based cryptography: Single-qubit protocol secure against multi-qubit attacks**, Lyon, France, invited

12/07/2022 **17th Conference on the Theory of Quantum Computation, Communication and Cryptography**, *Position-based cryptography: Single-qubit protocol secure against multi-qubit attacks*, Urbana-Champaign, Illinois, USA, online

31/05/2022 **QuantAlgo workshop**, *Position-based cryptography: Single-qubit protocol secure against multi-qubit attacks*, Brussels, Belgium

08/03/2022 **25th Annual Conference on Quantum Information Processing**, *Exponential Decay of Mutual Information for Gibbs states of local Hamiltonians*, Pasadena, California, USA, talk given by coauthor Ángela Capel

02/09/2021 **21st Asian Quantum Information Science Conference**, *Position-based cryptography: Single-qubit protocol secure against multi-qubit attacks*, Tokyo, Japan, online

27/08/2021 **11th Annual Conference on Quantum Cryptography**, *Position-based cryptography: Single-qubit protocol secure against multi-qubit attacks*, Amsterdam, Netherlands, online

06/08/2021 **International Congress on Mathematical Physics 2021**, *Some applications of free spectrahedra to quantum information theory*, Geneva, Switzerland, talk given by coauthor Ion Nechita (invited)

07/06/2021 **18th International Conference on Quantum Physics and Logic**, *Maximal violation of steering inequalities and the matrix cube*, Gdansk, Poland, online (unscheduled talk)

08/12/2020 **20th Asian Quantum Information Science Conference**, *Incompatibility in general probabilistic theories, generalized spectrahedra, and tensor norms*, Sydney, Australia, online

13/02/2020 **Workshop on relativistic quantum information theory**, *Towards easier protocols for quantum position-verification*, Cambridge, UK, invited

05/08/2019 **6th International Conference on Continuous Optimization**, *Compatibility of quantum measurements and inclusion constants for free spectrahedra*, Berlin, Germany, invited

02/07/2019 **Workshop Generalized Probabilistic Theories and Quantum Information**, *A strengthened data processing inequality for the Belavkin-Staszewski relative entropy*, Lyon, France, invited

15/05/2019 **Workshop II: Operator Algebras, Groups and Applications to Quantum Information**, *Compatibility of quantum measurements and inclusion constants for free spectrahedra*, Madrid, Spain

13/03/2019 **DPG spring meeting**, *Compatibility of quantum measurements and inclusion of free spectrahedra*, Rostock, Germany

14/01/2019 **22nd Annual Conference on Quantum Information Processing**, *Compatibility of quantum measurements and inclusion constants for free spectrahedra*, Boulder, Colorado, USA

14/06/2018 **15th Central European Quantum Information Processing Workshop**, *Quantum compression relative to a set of measurements*, Smolenice, Slovakia

14/03/2017 **DPG spring meeting**, *Lossless quantum compression of quantum measurements*, Bremen, Germany

22/07/2016 **Summer school Stochastic Methods in Quantum Mechanics**, *Local factorisation of the dynamics of quantum spin systems*, Autrans, France

**Posters** Contributions to conferences and workshops in the form of posters were presented at **29th Annual Conference on Quantum Information Processing**, Riga, Latvia, 2025; **13th Beyond IID in Information Theory**, Munich, Germany, 2025; **20th Central European Quantum Information Processing Workshop**, Smolenice, Slovakia, 2025; **19th Conference on the Theory of Quantum Computation, Communication and Cryptography**, Okinawa, Japan, 2024; **6th Seefeld Workshop on Quantum Information**, Seefeld, Austria, 2024; **27th Annual Conference on Quantum Information Processing**, Taipei, Taiwan, 2024; **18th Central European Quantum Information Processing Workshop**, Smolenice, Slovakia, 2023; **20th International Conference on Quantum Physics and Logic**, Paris, France, 2023; **26th Annual Conference on Quantum Information Processing**, Ghent, Belgium, 2023; **IAMP - EMS Summer School in Mathematical Physics**, Munich, Germany, 2022; **5th Seefeld Workshop on Quantum Information**, Seefeld, Austria, 2022; **25th Annual Conference on Quantum Information Processing**, Pasadena, California, USA, 2022; **21st Asian Quantum Information Science Conference**, Tokyo, Japan, 2021 (online); **16th Conference on the Theory of Quantum Computation, Communication and Cryptography**, Riga, Latvia, 2021 (online); **24th Annual Conference on Quantum Information Processing**, Munich, Germany, 2021 (online); **Quantum Information Theory and Mathematical Physics 2018**, Budapest, Hungary, 2018; **21st Annual Conference on Quantum Information Processing**, Delft, Netherlands, 2018; **Conference on Quantum Information Theory**, Paris, France, 2017; **12th Conference on the Theory of Quantum Computation, Communication and Cryptography**, Paris, France, 2017

## Teaching experience

**Introduction to University Pedagogy**, *Course at the University of Copenhagen*, 3 ECTS

**Lecturer**

Quantum Information Theory

**Teaching assistant**

Analysis 1 & 2 for Physicists, Vector Analysis, Differential Topology, Quantum Operations, Mathematics 2 for Economists, Analysis 3 for Electrical Engineers, Introduction to Representation Theory

**Co-supervisor**

1 PhD student (since November 2024), 2 Master's theses, 3 Bachelor's theses, 2 summer students

## Academic responsibilities

**Representative for the scientific staff**

during the 2025 Héres evalution of the Grenoble Computer Science Laborartory (LIG).

**Technical program committee**

28th Annual Conference on Quantum Information Processing 2025, Raleigh, North Carolina, USA  
Beyond IID in Information Theory 2024, Urbana-Champaign, Illinois, USA

**Journal reviewer**

Communications in Mathematical Physics, IEEE Journal on Selected Areas in Information Theory, IEEE Transactions on Information Theory, International Journal of Theoretical Physics, International Mathematics Research Notices, Journal of Mathematical Physics, Journal of Physics A: Mathematical and Theoretical, Journal of Physics Communications, Letters in Mathematical Physics, Physical Review A, Physical Review Letters, Proceedings of the Royal Society A: Mathematical, Physical and Engineering Sciences, PRX Quantum, Quantum, Quantum Information Processing, SIAM Journal on Optimization

**Conference subreviewer**

ACM Symposium on Theory of Computing (STOC); Annual Conference on Quantum Information Processing (QIP); Asian Quantum Information Science Conference (AQIS); Beyond IID in Information Theory; Conference on the Theory of Quantum Computation, Communication and Cryptography (TQC); IEEE International Symposium on Information Theory (ISIT); Innovations in Theoretical Computer Science (ITCS); International Symposium on Mathematical Theory of Networks and Systems (MTNS); QCrypt

## **Outreach**

Seminar week of the L3 computer science students at ENS Lyon, MFML workshop at LIG, laboratory days at LIG, Grenoble Quantum Dates

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## **Languages**

German	Native speaker
English	Fluent (CEF C1 diploma)
French	Excellent command (CEF B2 diploma)
Spanish	Very good command (CEF B2 diploma)
Danish	Very good command (CEF B2 diploma)
Swedish	Good command (CEF B2 diploma)
Russian	Basic command (CEF A2 diploma)