Jonas Conneryd

Department of Computer Science
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Date of birth: July 31st, 1997
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Education

Lund University — Lund, Sweden
Ph.D. in Theoretical Computer Science — 2026 (expected)
Advisor: Prof. Tatyana Turova

Lic. Eng. in Computer Science — May 2025
Thesis: *On the Average-Case Proof Complexity of Graph Coloring*
Opponent: Prof. Nutan Limaye, ITU Copenhagen

KTH Royal Institute of Technology — Stockholm, Sweden
M.Sc. in Mathematics (joint with Stockholm University) — June 2021
Thesis: *Geometric Bounds for Steklov Eigenvalues on Graphs* (awarded *Mittag-Leffler Prize*)

B.Sc. in Engineering Physics — June 2019
Thesis: *Explicit Symplectic Integrators for Non-Separable Hamiltonians in Molecular Dynamics*

Research Interests

Computational complexity theory, particularly proof complexity with an algebraic flavor and the complexity of (random) constraint satisfaction problems.

Publications

[1] Jonas Conneryd, Yassine Ghananne, and Shuo Pang. *Lower Bounds for CSP Hierarchies Through Ideal Reduction*. To appear in *SODA '26*.

[2] Jonas Conneryd, Kilian Risse, and Dmitry Sokolov. *Graph Coloring Is Hard on Average for Polynomial Calculus over Roots of Unity*. In preparation. 2025.

[3] Jonas Conneryd, Susanna F. de Rezende, Jakob Nordström, Shuo Pang, and Kilian Risse. *Graph Colouring Is Hard on Average for Polynomial Calculus and Nullstellensatz*. FOCS 2023.

[4] Jonas Conneryd. *Geometric Bounds for Steklov Eigenvalues on Graphs*. M.Sc. thesis. Stockholm University, 2021.

Talks

KTH Royal Institute of Technology — Stockholm, Sweden
Lower Bounds for CSP Hierarchies Through Ideal Reduction — Fall 2025

Oxford Proof Complexity Workshop — Oxford, United Kingdom
Lower Bounds for CSP Hierarchies Through Ideal Reduction — Summer 2025

Proof Complexity and Beyond, Oberwolfach Workshop 2413 — Oberwolfach, Germany
Graph Colouring Is Hard on Average for Polynomial Calculus and Nullstellensatz — Spring 2024

Algorithmic Research Cooperation around Øresund (ARCO) — Odense, Denmark
Graph Colouring Is Hard on Average for Polynomial Calculus and Nullstellensatz — Fall 2023

IEEE Symposium on Foundations of Computer Science — Santa Cruz, CA, USA
Graph Colouring Is Hard on Average for Polynomial Calculus and Nullstellensatz — Fall 2023

Research Visits and Workshops

KTH Royal Institute of Technology — Stockholm, Sweden
Month-long visit to the theory group. — Fall 2025

University of Oxford — Oxford, United Kingdom
Visiting researcher for the workshop *Proof Complexity*. — Summers 2024, 2025

McGill University — Montréal, Canada
Week-long visit to the group of Prof. Robert Robere. — Summer 2024

Mathematische Forschungsinstitut Oberwolfach — Oberwolfach, Germany
Visiting researcher for the workshop *Proof Complexity and Beyond*. — Spring 2024

Chalmers University of Technology — Gothenburg, Sweden
Visiting researcher for the *Workshop on Algebra and Computation*. — Summer 2023

Simons Institute for the Theory of Computing at UC Berkeley — Berkeley, CA, USA
2-month visiting graduate student for the program *Satisfiability: Extended Reunion*. — Spring 2023

Schloss Dagstuhl — Dagstuhl, Germany
Visiting researcher for the workshop *Satisfiability: Theory, Practice and Beyond*. — Fall 2022

Honors and Scholarships

- *Oberwolfach Leibniz Graduate Student*; Mathematische Forschungsinstitut Oberwolfach, 2024
- *Accepted as WASP affiliated student,* 2021
- *Mittag-Leffler Prize for outstanding M.Sc. theses in mathematics*; Stockholm University, 2021
- *Ingenjör Ernst Johnson Scholarship for outstanding academic achievements*; KTH, 2020, 2021
- *Henrik Göransson Sandviken Scholarship for outstanding academic achievements*; KTH, 2018
- *University Merit Scholarship for outstanding academic achievements*; KTH, 2018, 2019, 2020, 2021

Service

Reviewed papers for the following venues:

- Conferences: FOCS '22, CCC '22, CCC '23, SAT '23, SAT '24, ICALP '24, AAAI '23, AAAI '24, SOSA '25, STOC '25
- Journals: Transactions on Computational Logic, Theoretical Computer Science, SIAM Journal on Discrete Mathematics

Teaching Experience

Lund University

- EDAA40/75 Discrete Structures in Computer Science, 2022, 2024, 2025
- EDAN55 Advanced Algorithms, 2023, 2024
- EDAN01 Constraint Programming, 2022, 2023

KTH Royal Institute of Technology

- SF1661 Perspectives on Mathematics, 2018
- SF1624 Algebra and Geometry, 2017

Work Experience

AP3 Third National Swedish Pension Fund Stockholm, Sweden
ILS Intern 2019-2021
Quantitative analysis of insurance-linked securities (ILS).

Technical Skills

Programming: Python, Go, LaTeX, Julia, MATLAB
Software: RMS Miu