

# Jonas Conneryd

Department of Computer Science  
Lund University, Sweden

Date of birth: July 31st, 1997  
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## Education

### Lund University

Ph.D. in Theoretical Computer Science  
Advisor: Prof. Tatyana Turova

Lund, Sweden  
2026 (expected)

Lic. Eng. in Computer Science

Thesis defended May 2025

Thesis: *On the Average-Case Proof Complexity of Graph Coloring*

Opponent: Prof. Nutan Limaye, ITU Copenhagen

### KTH Royal Institute of Technology

M.Sc. in Mathematics (joint with Stockholm University)

Stockholm, Sweden  
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 Ghannane, and Shuo Pang. *Lower Bounds for CSP Hierarchies Through Ideal Reduction*. To appear in SODA 2026.
- [2] Jonas Conneryd, Kilian Risse, and Dmitry Sokolov. *Graph Coloring Is Hard on Average for Polynomial Calculus over Roots of Unity*. To be incorporated into a larger project also involving Yassine Ghannane, Jakob Nordström, and Shuo Pang. 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

*Lower Bounds for CSP Hierarchies Through Ideal Reduction*

Stockholm, Sweden  
Fall 2025

### Oxford Proof Complexity Workshop

*Lower Bounds for CSP Hierarchies Through Ideal Reduction*

Oxford, United Kingdom  
Summer 2025

### Proof Complexity and Beyond, Oberwolfach Workshop 2413

*Graph Colouring Is Hard on Average for Polynomial Calculus and Nullstellensatz*

Oberwolfach, Germany  
Spring 2024

### Algorithmic Research Cooperation around Øresund (ARCO)

*Graph Colouring Is Hard on Average for Polynomial Calculus and Nullstellensatz*

Odense, Denmark  
Fall 2023

### IEEE Symposium on Foundations of Computer Science

*Graph Colouring Is Hard on Average for Polynomial Calculus and Nullstellensatz*

Santa Cruz, CA, USA  
Fall 2023

## Research Visits and Workshops

### KTH Royal Institute of Technology

Month-long visit to the theory group.

Stockholm, Sweden  
Fall 2025

### University of Oxford

Visiting researcher for the workshop *Proof Complexity*.

Oxford, United Kingdom  
Summers 2024, 2025

### Centre International de Rencontres Mathématiques

Visiting researcher for the *Complexity as a Kaleidoscope* research school.

Marseille, France  
Spring 2025

### DIMACS, Rutgers University

Visiting researcher for the *Frontiers in Complexity Workshop*.

New Brunswick, NJ, USA  
Summer 2024

### McGill University

Week-long visit to the group of Prof. Robert Robere.

Montréal, Canada  
Summer 2024

### Mathematische Forschungsinstitut Oberwolfach

Visiting researcher for the workshop *Proof Complexity and Beyond*.

Oberwolfach, Germany  
Spring 2024

### Chalmers University of Technology

Visiting researcher for the *Workshop on Algebra and Computation*.

Gothenburg, Sweden  
Summer 2023

### Simons Institute for the Theory of Computing at UC Berkeley

2-month visiting graduate student for the program *Satisfiability: Extended Reunion*.

Berkeley, CA, USA  
Spring 2023

## 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

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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

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### 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

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### AP3 Third National Swedish Pension Fund

ILS Intern

Quantitative analysis of insurance-linked securities (ILS).

Stockholm, Sweden

2019-2021

## Technical Skills

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Programming: Python, Go, L<sup>A</sup>T<sub>E</sub>X, Julia, MATLAB

Software: RMS Miu