Jonas Conneryd

Department of Computer Science
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Education

Lund University — Lund, Sweden
Ph.D. in Theoretical Computer Science — 2026 (expected)
Advisor: Asst. Prof. Susanna de Rezende

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 flavour as well as connections between proof complexity and circuit complexity.

Publications

[1] Jonas Conneryd, Susanna F. de Rezende, Jakob Nordström, Shuo Pang, and Kilian Risse. *Graph Colouring Is Hard on Average for Polynomial Calculus and Nullstellensatz*. Accepted to FOCS'23.

[2] Jonas Conneryd. *Geometric Bounds for Steklov Eigenvalues on Graphs*. M.Sc. thesis. Stockholm University, 2021. 53 pp.

[3] Jonas Conneryd and Anna Lassen. *Explicit Symplectic Integrators for Non-Separable Hamiltonians in Molecular Dynamics*. B.Sc. thesis. KTH Royal Institute of Technology, 2019. 27 pp.

Talks

Proof Complexity and Beyond, Oberwolfach Workshop 2413 — Oberwolfach, Germany
Graph Colouring Is Hard on Average for Polynomial Calculus and Nullstellensatz — Spring 2024
IEEE Symposium on Foundations of Computer Science — Santa Cruz, CA
Graph Colouring Is Hard on Average for Polynomial Calculus and Nullstellensatz — Fall 2023

Research Visits and Workshops

University of Oxford — Oxford, United Kingdom
Visiting Researcher — Summer 2024
Visiting researcher for the workshop *Proof Complexity*.
McGill University — Montréal, Canada
Visiting Researcher — Summer 2024
Week-long visit to the group of Prof. Robert Robere.
Mathematische Forschungsinstitut Oberwolfach — Oberwolfach, Germany
Visiting Researcher — Spring 2024
Visiting researcher for the workshop *Proof Complexity and Beyond*.
Simons Institute for the Theory of Computing at UC Berkeley — Berkeley, CA
Visiting Graduate Student — Spring 2023
Visiting researcher for the semester programme *Satisfiability: Extended Reunion*.
Schloss Dagstuhl — Dagstuhl, Germany
Visiting Researcher — Fall 2022
Visiting researcher for the workshop *Satisfiability: Theory, Practice and Beyond*.

Awards and Scholarships

- *Oberwolfach Leibniz Graduate Student*; Mathematische Forschungsinstitut Oberwolfach, 2021
- *Mittag-Leffler Prize for outstanding Master's 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

I have 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
- Journals: Transactions on Computational Logic, Theoretical Computer Science

Teaching Experience

Lund University

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

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

References

Susanna de Rezende
Assistant Professor, Lund University
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