

# Kilian Risse

## Curriculum Vitae

Department of Computer Science, LTH  
Lund University

[rissekil@gmail.com](mailto:rissekil@gmail.com)  
[kilianrisse.github.io](https://kilianrisse.github.io)

[Google Scholar](#)

[dblp](#)

### **Research Interests**

---

Computational Complexity with a focus on Proof Complexity.

### **Positions**

---

08.2025 – 10.2026	LTH, Lund University, Lund, Sweden Postdoctoral Researcher Host: Susanna de Rezende
02.2023 – 07.2025	EPFL, Lausanne, Switzerland Postdoctoral Researcher Host: Ola Svensson

### **Education**

---

10.2017 – 12.2022	KTH Royal Institute of Technology, Stockholm, Sweden PhD in Computer Science Advisors: Per Austrin, Johan Håstad and Jakob Nordström Thesis: <i>On Long Proofs of Simple Truths</i>
09.2015 – 04.2017	ETH Zürich, Zurich, Switzerland Master of Science in Computer Science Focus: Theoretical Computer Science Thesis: <i>Phases of Unique Sink Orientations</i>
09.2012 – 09.2015	ETH Zürich, Zurich, Switzerland Bachelor of Science in Computer Science

### **Research Grants**

---

10.2017 – 10.2026	Swiss National Science Foundation Postdoc.Mobility Fellowship
-------------------	---

## **Invited Workshops**

---

- Bridges between proofs, communication, and computation – Isaac Newton Institute, Cambridge, United Kingdoms, November 30 - December 4, 2026.
  - Presentation: Optimal Average-Case Clique Lower Bounds for Some Tree-Like Proof Systems
- Proof Complexity – University of Oxford, United Kingdoms, September 3 - 5, 2024.
  - Presentation: Clique is Hard on Average for Sherali-Admas with Bounded Coefficients
- Proof Complexity and Beyond – Mathematisches Forschungsinstitut Oberwolfach, Germany, March 24 - 29, 2024.
  - Presentation: Clique is Hard on Average for Sherali-Admas with Bounded Coefficients
- Satisfiability: Theory, Practice, and Beyond – Simons Institute for the Theory of Computing at UC Berkeley, USA, April 17 - 21, 2023.
  - Presentation: On bounded depth proofs for Tseitin formulas on the grid; revisited
- Mathematical Approaches to Lower Bounds: Complexity of Proofs and Computation – ICMS Bayes Center, United Kingdoms, July 4 - 8, 2022.
  - Presentation: The Minimum Circuit Size Problem is Hard for SoS
- Proof Complexity – Banff International Research Station, Canada, January 19 - 24, 2020.
  - Presentation: Exponential Lower Bounds for Weak Pigeonhole Principle and Perfect Matching Formulas over Sparse Graphs
- Proof Complexity – Schloss Dagstuhl, Germany, January 28 - February 2, 2018.

## **Journal Publications**

---

1. Johan Håstad and Kilian Risse. On bounded depth proofs for tseitin formulas on the grid; revisited. *SIAM Journal on Computing*, 54(5):FOCS22–288–FOCS22–339, 2025. doi:10.1137/22M153851X
2. Susanna F. de Rezende, Jakob Nordström, Kilian Risse, and Dmitry Sokolov. Exponential resolution lower bounds for weak pigeonhole principle and perfect matching formulas over sparse graphs. *TheoretCS*, 4, 2025. doi:10.46298/THEORETICS.25.9
3. Per Austrin and Kilian Risse. Perfect matching in random graphs is as hard as tseitin. *TheoretCS*, 1, 2022. doi:10.46298/THEORETICS.22.2

## **Conference Publications**

---

1. Mika Göös, Gilbert Maystre, Kilian Risse, and Dmitry Sokolov. Supercritical tradeoffs for monotone circuits. In Michal Koucký and Nikhil Bansal, editors, *Proceedings of the 57th Annual ACM Symposium on Theory of Computing, STOC 2025, Prague, Czechia, June 23-27, 2025*, pages 1359–1370. ACM, 2025. doi:10.1145/3717823.3718229
2. Susanna F. de Rezende, Aaron Potechin, and Kilian Risse. Clique is hard on average for unary sherali-adams. In *64th IEEE Annual Symposium on Foundations of Computer Science, FOCS 2023, Santa Cruz, CA, USA, November 6-9, 2023*, pages 12–25. IEEE, 2023. doi:10.1109/FOCS57990.2023.00008

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. In *64th IEEE Annual Symposium on Foundations of Computer Science, FOCS 2023, Santa Cruz, CA, USA, November 6-9, 2023*, pages 1–11. IEEE, 2023. doi:[10.1109/FOCS57990.2023.00007](https://doi.org/10.1109/FOCS57990.2023.00007)
4. Per Austrin and Kilian Risse. Sum-Of-Squares Lower Bounds for the Minimum Circuit Size Problem. In Amnon Ta-Shma, editor, *38th Computational Complexity Conference (CCC 2023)*, volume 264 of *Leibniz International Proceedings in Informatics (LIPIcs)*, pages 31:1–31:21, Dagstuhl, Germany, 2023. Schloss Dagstuhl – Leibniz-Zentrum für Informatik. Accepted to Theory of Computing. doi:[10.4230/LIPIcs.CCC.2023.31](https://doi.org/10.4230/LIPIcs.CCC.2023.31)
5. Johan Håstad and Kilian Risse. On bounded depth proofs for tseitin formulas on the grid; revisited. In *63rd IEEE Annual Symposium on Foundations of Computer Science, FOCS 2022, Denver, CO, USA, October 31 - November 3, 2022*, pages 1138–1149. IEEE, 2022. doi:[10.1109/FOCS54457.2022.00110](https://doi.org/10.1109/FOCS54457.2022.00110)
6. Per Austrin and Kilian Risse. Perfect matching in random graphs is as hard as tseitin. In Joseph (Seffi) Naor and Niv Buchbinder, editors, *Proceedings of the 2022 ACM-SIAM Symposium on Discrete Algorithms, SODA 2022, Virtual Conference / Alexandria, VA, USA, January 9 - 12, 2022*, pages 979–1012. SIAM, 2022. doi:[10.1137/1.9781611977073.43](https://doi.org/10.1137/1.9781611977073.43)
7. Susanna F. de Rezende, Jakob Nordström, Kilian Risse, and Dmitry Sokolov. Exponential resolution lower bounds for weak pigeonhole principle and perfect matching formulas over sparse graphs. In Shubhangi Saraf, editor, *35th Computational Complexity Conference, CCC 2020, July 28-31, 2020, Saarbrücken, Germany (Virtual Conference)*, volume 169 of *LIPIcs*, pages 28:1–28:24. Schloss Dagstuhl - Leibniz-Zentrum für Informatik, 2020. doi:[10.4230/LIPICS.CCC.2020.28](https://doi.org/10.4230/LIPICS.CCC.2020.28)