Daniel Gratzer
Assistant Professor, Aarhus University
Curriculum Vitae and Publication List

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Employment

— **_Aarhus University_** Tenure-Track Assistant Professor   (*Spring 2025 – Present*)

— **_University of Oxford_** Visiting Researcher   (*Summer 2024 – Winter 2025*)
Hosted by Sam Staton

— **_Aarhus University_** Postdoctoral Researcher   (*Fall 2023 – Summer 2024*)
Under Lars Birkedal

Education and Employment

— **_Aarhus University_** PhD   (*Fall 2018 – Fall 2023*)
(Masters GPA: 12.0/12.0)   Advised by Lars Birkedal
Thesis: *Syntax and semantics of modal type theory*

— **_Carnegie Mellon University_** Bachelors of Science   (*Fall 2014 – Spring 2018*)
(GPA: 3.73/4.00. Dean's List for 5 semesters. University Honors)
Honors Thesis: *The Next 700 Failed Step-Index-Free Logical Relations*   Supervised by Karl Crary

Research Visits

• **Chalmers University** with Thierry Coquand   *March 2022–June 2022*
• **University of Paris** with Adrien Guatto   *December 2021*
• **Aarhus University** with Lars Birkedal   *June 2017–August 2021*

Publications

In my field conferences are the typical venue and a conference publication is full peer-reviewed research paper. While all conferences were ranked B or higher, several are rated at A* by the Australian CORE rankings. This signifies that they are in the top 4% of CS conferences. CORE rankings for journals ceased in 2020, but in the latest ranking two of the journal below were rated at A, signifying that they were within the top 10% of computer science journals.

20. **Controlling Unfolding in Dependent Type Theory**   *2025*
Daniel Gratzer, Jonathan Sterling, Carlo Angiuli, Thierry Coquand, Lars Birkedal
To appear in *Mathematical Structures in Computer Science (MSCS)*

19. **The Yoneda embedding in simplicial type theory**   *2025*
Daniel Gratzer, Ulrik Buchholtz, Jonathan Weinberger
Logic in Computer Science (LICS)
CORE A* flagship conference
Distinguished paper

18. **Idempotent resources in separation logic: the heart of core in Iris**   *2025*
Daniel Gratzer, Mathias Møller, Lars Birkedal
Foundations of Software Science and Computation Structures (FoSSaCS)
CORE A conference

17. **A modal deconstruction of Löb induction**   *2025*
Daniel Gratzer
Principles of Programming Languages (POPL)
CORE A* flagship conference

16. **Unifying cubical and multimodal type theory**   *2024*
Frederik Aagaard, Magnus Kristensen, Daniel Gratzer, Lars Birkedal
Logical Methods in Computer Science (LMCS)
CORE A journal

15. **The Category of Iterative Sets in Homotopy Type Theory and Univalent Foundations**   *2024*
Daniel Gratzer, Håkon Gylterud, Anders Mörtberg, Elisabeth Stenholm
Mathematical Structures in Computer Science (MSCS)

14. **Towards univalent reference types**   *2024*
    Jonathan Sterling, Daniel Gratzer, Lars Birkedal
    Computer Science Logic 2024

13. **Strict universes for Grothendieck topoi**   *2023*
    Daniel Gratzer, Michael Shulman, Jonathan Sterling
    To appear in Theory and Applications of Categories

12. **mitten: a flexible multimodal proof assistant**   *2023*
    Philipp Stassen, Daniel Gratzer, Lars Birkedal
    TYPES 2022 Post-proceedings

11. **Under lock and key: a proof system for a multimodal logic**   *2023*
    G.A. Kavvos, Daniel Gratzer
    Bulletin of Symbolic Logic

10. **A stratified approach to Löb induction**   *2022*
    Daniel Gratzer, Lars Birkedal
    Formal Structures in Computation and Deduction (FSCD)

9. **Normalization for Multimodal Type Theory**   *2022*
    Daniel Gratzer
    Logic in Computer Science (LICS)
    CORE A* flagship conference
    Selected for extended version (181 submitted, 63 accepted, ~10 extended versions)

8. **A Cubical Language for Bishop Sets**   *2022*
    Jonathan Sterling, Carlo Angiuli, Daniel Gratzer
    Logical Methods in Computer Science (LMCS)
    CORE A journal

7. **Modalities and Parametric Adjoints**   *2022*
    Daniel Gratzer, Evan Cavallo, G.A. Kavvos, Adrien Guatto, Lars Birkedal
    Transactions on Computational Logic (ToCL)
    CORE A journal

6. **Multimodal Dependent Type Theory**   *2021*
    Daniel Gratzer, G.A. Kavvos, Andreas Nuyts, Lars Birkedal.
    Logical Methods in Computer Science (LMCS)
    CORE A journal

5. **Transfinite Iris: Resolving an Existential Dilemma of Step-Indexed Separation Logic**   *2021*
    Simon Spies, Leonard Gäher, Daniel Gratzer, Joseph Tassarotti
    Robbert Krebbers, Derek Dreyer, Lars Birkedal
    Programming Language Design and Implementation (PLDI)
    CORE A* flagship conference

4. **Multimodal Dependent Type Theory**   *2020*
    Daniel Gratzer, G.A. Kavvos, Andreas Nuyts, Lars Birkedal.
    Logic in Computer Science (LICS)
    CORE A* flagship conference
    Selected for extended version (174 submitted, 69 accepted, ~10 extended versions)

3. **Implementing a Modal Dependent Type Theory**   *2019*
    Daniel Gratzer, Jonathan Sterling, Lars Birkedal.
    International Conference on Functional Programming (ICFP)
    CORE A* flagship conference
    Distinguished paper (119 submissions, 39 accepted and 4 distinguished papers).

2. **Cubical Syntax for Reflection-Free Extensional Equality**   *2019*
    Jonathan Sterling, Carlo Angiuli, Daniel Gratzer.
    Formal Structures in Computation and Deduction (FSCD)
    Best Junior Researcher Paper

1. **Managing Obligations in Higher-Order Concurrent Separation Logic** *2019*
Aleš Bizjak, Daniel Gratzer, Robbert Krebbers, Lars Birkedal.
Principles of Programming Languages (POPL)
CORE A* flagship conference

Selected Talks

I have grouped talks by the research they present. Only invited talks—as opposed to conference talks—are included.

— **The Yoneda Embedding in Simplicial Type Theory**
  - University of Birmingham, Midlands Logic Seminar *2024*

— **Directed Univalence in Simplicial Type Theory**
  - University of Manchester, YAMCATS *2025*
  - University of Oxford, OASIS Seminar *2025*
  - University of Birmingham, Theory Seminar *2024*

— **Syntax and semantics of modal type theory**
  - University of Cambridge *2025*
  - University of Oxford, PUDDLE Seminar *2024*
  - University of Lyon, Chocola Seminar *2024*
  - Homotopy Type Theory and Computation *2024*
  - Homotopy Type Theory Electronic Seminar Talks (HoTTEST) *2023*
  - Bergen University, Type Theory Seminar *2023*

— **Controlling unfolding in type theory**
  - Second WG6 meeting *2023*

— **Normalization for multimodal type theory**
  - Chalmers University, ProgLog Seminar *2022*

— **Sketching type theories**
  - University of Lyon, Chocola Seminar *2021*

— **Multimodal Dependent Type Theory**
  - Stockholm University, Logic Seminar *2020*
  - IT University of Copenhagen, PLZ Seminar *2020*
  - University of Paris *2019*

— **Implementing a Modal Dependent Type Theory**
  - Computer Science Day in Aarhus University *2019*

Teaching and Service

— ***Organizer*** for HoTT/UF (2025, 2026)

— ***Program committee member*** for MFPS (2022), HoTT/UF (2024), LICS (2025), ICFP (2025), TYPES (2025), FSCD (2026)

— ***Layout Editor*** for LMCS *(Spring 2019 – Spring 2021)*

— ***External reviewer*** for CSL, ESOP, POPL, ITP, ICFP, JFP, LICS, and MSCS.

— ***Lecture Series***
  - Foundations of Guarded Recursion at EPIT Summer School *(Spring 2025)*
  - Dependent Type Theory at University of Oxford *(2024)*

— ***Teaching at Aarhus University***
  - Lecturer for Advanced Topics in Programming Language Theory *(Fall 2025)*
  - Lecturer for Modern Dependent Type Theory *(Spring 2024)*
  - Co-organizer for Categorical Type Theory Seminar *(Spring 2021)*

- Co-organizer for Category Theory   (*Fall 2019, Fall 2020*)

— ***Supervision***
  - Rahul Chabra, PhD (joint with Lars Birkedal)   *2025–present*
  - Zoe Stafford, Summer Internship   *2025*
  - Julian Marquet, Masters Internship (joint with Lars Birkedal)   *2025*
  - Mathias Adams Møller, Research Assistant (joint with Lars Birkedal)   *2024–2025*