

# Daniel Gratzer

Postdoctoral Researcher, Aarhus University  
Curriculum Vitae and Publication List

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<https://jozefg.github.io>

## Employment

- **Aarhus University** Postdoctoral Researcher (Fall 2023 – Present)  
Supervised by [Lars Birkedal](#)

## Education

- **Aarhus University** PhD (Fall 2018 – Fall 2023)  
(Masters GPA: 12.0/12.0)  
Thesis: **Syntax and semantics of modal type theory**  
(Defense scheduled for October 27, 2023)  
Advised by [Lars Birkedal](#)
- **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, not journals, and a conference publication is full peer-reviewed research paper. Four of the conferences below are rated at A\* by [the Australian CORE rankings](#). This signifies that they are in the top 4% of computer science 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.

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

## Talks

I have grouped talks by the research they present. Invited talks—as opposed to conference talks—are highlighted.

- **Syntax and semantics of modal type theory**
  - Invited talk at Homotopy Type Theory Electronic Seminar Talks (HoTTTEST) 2023
  - Invited talk at Bergen University, Type Theory Seminar 2023
- **Controlling unfolding in type theory**
  - Invited talk at Second WG6 meeting 2023
- **Modalities and Parametric Adjoints**
  - Conference talk at *TYPES* 2021
- **Normalization for multimodal type theory**
  - Conference talk at *Logic in Computer Science* 2022
  - Invited talk at Chalmers University, ProgLog Seminar 2022
  - Conference talk at *TYPES* 2021
- **A stratified approach to Löb induction**
  - Conference talk at *Formal Structures for Computation and Deduction* 2022
- **Sketching type theories**
  - Invited talk at University of Lyon, Choccola Seminar 2021
- **Multimodal Dependent Type Theory**
  - Workshop talk at *International Congress on Mathematical Software* 2020
  - Conference talk at *Logic in Computer Science* 2020
  - Conference talk at *TYPES* 2020
  - Invited talk at Stockholm University, Logic Seminar 2020
  - Invited talk at IT University of Copenhagen, PLZ Seminar 2020
  - Invited talk at University of Paris 2019

- **Implementing a Modal Dependent Type Theory**
  - Conference talk at *International Conference on Functional Programming* 2019
  - **Invited talk** at *Computer Science Day in Aarhus University* 2019
- **Managing Obligations in Higher-Order Concurrent Separation Logic**
  - Conference talk at *Principles of Programming Languages* 2019

## Teaching and Service

- **Program committee member** for MFPS (2022)
- **Layout Editor** for LMCS (Spring 2019 – Spring 2021)
- **External reviewer** for CSL, ESOP, POPL, ITP, ICFP, JFP, LICS, and MSCS.
- **Teaching at Aarhus University**
  - Teaching assistant for Compilers (Fall 2022)
  - Co-organizer for Categorical Type Theory Seminar (Spring 2021)
  - Co-organizer for Category Theory (Fall 2019, Fall 2020)
  - Teaching assistant for Program Analysis and Verification (Fall 2018)

In addition to the above, I have co-advised masters theses and projects with Lars Birkedal.
- **Teaching at Carnegie Mellon University**
  - Teaching assistant for Constructive Logic (Fall 2017)
  - Teaching assistant for Practical Foundations of Programming Languages (Spring 2016)
  - Teaching assistant for Introduction to Functional Programming (Spring 2015 – Fall 2015)