# Curriculum Vitae

SEBASTIAN D. MELZER

## Personal Information

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**Languages** Dutch / English / German

## Employment

- **Postdoctoral Researcher** 2025–2026
  Department of Mathematics, University of Salerno, Italy
- **Graduate Assistant** 2021–2025
  Department of Mathematical Sciences, New Mexico State University, United States
- **Teaching Assistant** 2017–2018
  Faculty of Science, University of Amsterdam, the Netherlands
- **Teaching Assistant** 2017
  Faculty of Economics and Business, University of Amsterdam, the Netherlands

## Education

- **PhD in Mathematics** 2021–2025
  New Mexico State University, Las Cruces, United States
  *Pointfree topology and Priestley duality* – Advisor: Guram Bezhanishvili
- **MSc in Logic** (with distinction) 2018–2020
  University of Amsterdam, the Netherlands
  *Canonical formulas for the Lax Logic* – Advisor: Nick Bezhanishvili
- **BSc in Computing Science** (with distinction) 2015–2018
  University of Amsterdam, the Netherlands
  *Thread-oriented program algebra* – Advisors: Inge Bethke and Alban Ponse

## Preprints and publications

### Accepted

[1] G. Bezhanishvili, S. D. Melzer, R. Raviprakash, and A. L. Suarez TBD
*Local compactness does not always imply spatiality* arXiv
**Q&A in General Topology**.

### Published

[2] G. Bezhanishvili, P. Bhattacharjee, and S. D. Melzer 2027
*Maximal d-spectra via Priestley duality* doi
**Journal of Algebra and its Applications**, Online Ready

[3] G. Bezhanishvili and S. D. Melzer 2025
*Algebraic frames in Priestley duality* doi
**Algebra Universalis**, 86(6)

[4] G. Bezhanishvili and S. D. Melzer 2023
*Deriving dualities in pointfree topology from Priestley duality* doi
**Applied Categorical Structures**, 31(34)

[5] G. Bezhanishvili and S. D. Melzer 2022
*Hofmann–Mislove through the lenses of Priestley* doi
**Semigroup Forum**, 105(3):825-833

### Submitted

[6] G. Bezhanishvili and S. D. Melzer TBD
*When is double negation Scott continuous?* arXiv

[7] G. Bezhanishvili, P. Bhattacharjee, S. D. Melzer, and D. A. Moshier TBD
*Maximal d-spectra and locally compact Hausdorff spaces* arXiv

[8] S. D. Melzer, C. Rathilal, and R. Raviprakash TBD
*A choice-free approach to Wallman compactifications* arXiv

[9] G. Bezhanishvili and S. D. Melzer TBD
*Priestley perspective on pointfree topology* arXiv

## Talks

### Conference Talks

- **TACL**, Kraków, Poland July 2026
  *Generalizing the d-nucleus to stably continuous frames*
- **BLAST**, University of Colorado, Boulder, United States May 2025
  *Locally compact does not always imply spatiality*
- **TACL**, Universitat de Barcelona, Spain July 2024
  *The maximal spectrum of d-elements is not always Hausdorff*
- **BLAST**, University of North Texas, Denton, United States April 2024
  *When is max(dL) Hausdorff?*
- **ITAC**, Universidad Autónoma de San Luis Potosí, Mexico (online) October 2023
  *Priestley duality for d-frames*
- **BLAST**, University of North Carolina, Charlotte, United States May 2023
  *Algebraic Frames in Priestley duality*
- **AMS Special Session**, University of Texas, El Paso, United States September 2022
  *How to derive well-known dualities in point-free topology from Priestley duality*
- **TACL**, University of Coimbra, Portugal June 2022
  *Hofmann–Mislove through the lenses of Priestley*
- **BLAST**, New Mexico State University, Las Cruces, United States (online) June 2021
  *Canonical formulas for IK4*

### Seminar Talks

- **Tianyuan Research Centre**, Seminar on Domain Theory and its Applications December 2025
  *Locally compact and sober, but not quite enough points* Yunnan, China
- **University of Salerno**, Logic Seminar October 2025
  *Priestley duality and Pointfree topology* Fisciano, Italy
- **Chapman University**, Frame Theory Seminar December 2024
  *Priestley duality for frames* Orange, California, USA
- **New Mexico State University**, Foundations Seminar November 2022
  *Topics in Pointfree Topology: Duality Theorems* Las Cruces, New Mexico, USA
- **Utrecht University**, The Utrecht Logic in Progress Series (TULIPS) March 2021
  *Canonical formulas for the Lax Logic* Utrecht, the Netherlands (online)

### Tutorials

- **MITAC**, Metropolitan Autonomous University November 2024
  *Priestley duality and its applications to pointfree topology* Mexico City, Mexico

# Teaching experience

## Lecturer

**New Mexico State University**

- Trig & Pre-calculus — Spring 2025
- College Algebra — Spring + Fall 2024, Spring + Fall 2023, Fall 2022

## Teaching Assistant

**New Mexico State University**

- Introduction to Ordinary Differential Equations — Fall 2022
- Introduction to Real Analysis — Spring 2022
- Introduction to Higher Mathematics — Fall 2021

**University of Amsterdam**

- Image Processing and Computer Vision — Spring 2018
- Statistical Reasoning — Spring 2018
- Discrete Mathematics and Logic — Fall 2017
- Algorithms and Data Structures in Python — Fall 2017

# Grants and awards

- Scholarship for research activities — 2025
  PRIN 2017 Project "Duality for MV-algebras via their spectra"
  University of Salerno, Fisciano, Italy
- Award for Academic Excellence — 2025
  New Mexico State University, Las Cruces, United States
- Anna Schrufer Kist Endowed Scholarship — 2024
  New Mexico State University, Las Cruces, United States
- Joseph E. Kist Fellowship — 2021–2024
  New Mexico State University, Las Cruces, United States
- Grad Success Scholarship — 2021
  New Mexico State University, Las Cruces, United States
- Charles Swartz Endowed Scholarship — 2021
  New Mexico State University, Las Cruces, United States

# Professional service

## Reviews

- Mathscinet, two reviews, two reviews in progress.

## Journal refereeing

- Mathematica Bohemica, one review.
- Topology and its Applications, one review in progress.
- Topology Proceedings, one review in progress.

## Outreach

- Judge for **Undergraduate Research & Creative Arts Symposium** — 2025
  New Mexico State University, Las Cruces, United States