

# Mei Rose Connor

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*Wir müssen wissen, wir werden wissen.* —David Hilbert

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## Education

2018–2022 **B.Sc.**, *Stony Brook University*, Stony Brook, New York, 3.67/4.00  
Mathematics and Linguistics majors

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## Research Interests

Mathematics

- Algebraic Geometry
- Discrete Mathematics
- Many-valued logic, particularly seven-valued modal logic

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## Work Experience

Spring 2022 **Department Intern**, *Dept. of Linguistics, Stony Brook University*, Stony Brook, New York

- Read all lecture notes for Mathematical Methods for Linguistics, including new ones
- Provided detailed feedback on the lecture notes; the feedback should discuss content as well as presentation
- Wrote up detailed solutions (including discussion of incorrect solutions) for hand-crafted exercises in the lecture notes
- Tested a procedural generator for exercises with solutions

Summer 2021 **Academic Affiliate**, *Institute for Computational and Experimental Research Mathematics (ICERM), Brown University*, Providence, Rhode Island

- Conducted research at ICERM offices for 8 weeks on periodic trajectories of polygonal billiards dynamics
- Worked with undergraduates, TAs, and faculty mentors to prove results making connections between existing theorems and approaches
- Used SageMath (a package for Python) to test hypotheses and run simulations

Spring 2021 **Lecturer's Assistant**, *Dept. of Mathematics, Stony Brook University*, Stony Brook, New York

- Responded promptly to students' questions in virtual calculus class
- Participated in classroom management

Winter 2020 **Undergraduate Teaching Assistant**, *Dept. of Philosophy, Stony Brook University*, Stony Brook, New York

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- 2019–2022 **Student Software Coder**, *Teaching and Learning Lab, Center for Excellence in Learning and Teaching*, Stony Brook, New York
- Collaborated with faculty of Biology, Biomedical Engineering, and Philosophy to produce unique and specialized educational software
  - Designed and implemented interactive theorem prover to improve upon existing programs (Logic 2010, Logic 2000) to teach Łukasiewiczian propositional logic
  - Improved upon the Virtual Reality game *Tarski's Truth Machine*, making it accessible from desktop and a wide range of VR devices
  - Integrated the skills (graphics, video editing) of other members of the lab to improve user interfaces of software tools
- 2017–2018 **Lead Conference Organizer**, *Sonya Kovalevskaya Day of Math for Girls*, Ambler, Pennsylvania

## Conferences with Participation

- Summer 2022 **Mei Rose Connor supervised by Paul St. Denis**, *(Drag and) Drop It Like It's Hot: Comparison of Educational Software for Teaching Natural Deduction and Axiomatic Derivation*, MathFest 2022, Philadelphia, Pennsylvania
- Presented a poster highlighting a product, DragLogic, developed in the Student Software Coder position
  - Compared and contrasted features and interface of DragLogic with competing products including Logic 2010,  $\exists$ Logic, and QED.
- Winter 2022 **Mei Rose Connor, P. Michael Kielstra, Zachary Steinberg, Chenyang Sun**, *Hyperbolic Staircases: Periodic Paths on  $2g + 1$ -gons*, Joint Mathematics Meetings, Seattle, Washington
- Presented poster on work done at ICERM with 3 undergraduate collaborators
- Spring 2020 **Mei Rose Connor**, *JainaSyadLogic*, Gathering 4 Gardner 14, Atlanta, Georgia: Cancelled due to COVID
- Invited to give a 6-minute lecture on work in seven-valued logic
  - Prepared a unique giveaway for all conference participants related to work in logic and teaching logic
- Fall 2019 **Mei Rose Connor**, *Opening Statement*, Heidelberg Laureate Forum, Heidelberg, Germany
- Produced a 1-minute long Opening Statement shown to all participants and laureates at Opening Ceremonies
  - Engaged daily with mathematics and computer science laureates as well as young researchers from around the world
  - Attended professional development Q&A led by Fields medallist Efim Zelmanov

## Extracurricular Activities

- Spring 2021–  
Spring 2022 **President of Stony Brook University Math Club**, *Stony Brook University*, Stony Brook, New York
- Planned and organized events ranging from faculty and student lectures to statistics-themed craft night
  - Held meeting of executive board every week during which previous week's and future events are discussed
  - Designed posters and mailings sent to a 400+ person mailing list to raise awareness and attendance at events

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- Spring 2021 **Math With Words: An Introduction to Formal Semantics**, *Stony Brook University Math Club*, Virtual
- Introduced the idea of analyzing the meaning of sentences based on the meaning of constituent parts (compositionality)
  - Stepped through the process of deriving truth conditions for a sentence from lexical, phrasal, and substitution rules applied to it
  - Part of a series of Quarantined Undergraduate End-of-Semester Talks (QUEST) with various speakers (Spring Semester series)
  - Presented in under 20 minutes, as is the constraint for QUEST
- Winter 2020 **Bombelli and the History of Complex Numbers**, *Stony Brook University Math Club*, Virtual
- Discussed the history of complex numbers, building from the ideas of Diophantos and Mahavira to the problem of the solutions of cubics in the XVI century
  - Part of QUEST (Fall Semester series) and presented in under 20 minutes
- Spring 2020 **From True and False to JSL: An Adventure in Logic**, *Stony Brook University Math Club*, Virtual
- Introduced the ideas of the propositional logic connectives, their syntax, and their semantics in terms of truth tables
  - Discussed modal logic operators,  $\Box$  and  $\Diamond$  as well as modal axioms
  - Showed history, motivation, and syntax of JainaSyadLogic, the presenter's own 7-valued modal logic system
- Winter 2019 **Joint Mathematics Meetings**, Baltimore, Maryland

## Languages

English Native

Latin Intermediate

*Achieved a perfect score on the National Latin Exams 2014*

German Novice

## Computer skills

Proficient  $\text{\LaTeX}$  2<sub>ε</sub>, Desmos Graphing Calculator, LEGO Mindstorms EV3, JavaScript/jQuery, HTML/CSS, Python 3

Familiar with Maple, Sage/CoCalc, Mathematica

## Publications

### Papers

- [1] Mei Rose Connor, Diana Davis, Paige Helms, Samuel Lelièvre, Michael Kielstra, Zachary Steinberg, and Chenyang Sun. Hyperbolic staircases: Periodic paths on  $2g + 1$ -gons. <https://arxiv.org/abs/2111.13971>, 2021.