Matej Penciak

Contact Information

E-mail: matej.penciak@gmail.edu
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Employment

Yatima May 2022 - *Present*
Software Engineer

Northeastern University Fall 2019 - Spring 2022
Boston, MA
Zelevinsky Postdoctoral Fellow

Education

University of Illinois at Urbana-Champaign, Fall 2012 - Spring 2019
Urbana, IL
Ph.D., Mathematics

University of Rochester, Fall 2008 - Spring 2012
Rochester, NY
B.A. Honors, Mathematics, B.S., Physics magna cum laude

Teaching Experience

Northeastern University

Instructor of Record **Fall 2019 - Present**

- Math 7363, Topics in Algebraic Geometry: Spring 2021
- Math 3150, Real Analysis: Fall 2021
- Math 2321, Calculus 3: Spring 2020, Fall 2020, Fall 2021
- Math 2331, Linear Algebra: Fall 2019

University of Illinois at Urbana-Champaign

Teaching Assistant **Fall 2012 - Spring 2019**

- Math 124, Finite Math: Spring 2018
- Math 221, Calculus 1: Fall 2012, Head TA Fall 2014
- Math 231, Calculus 2: Head TA Fall 2015, Spring 2016
- Math 241, Calculus 3: Spring 2013 - Spring 2014, Spring 2015, Fall 2017, Spring 2019
- Math 415, Linear Algebra: Fall 2018
- Rated as excellent by students 7/11 semesters teaching

University of Rochester, Rochester, New York USA

Teaching Assistant **Fall 2010 - Spring 2012**

- Calculus 1, Algebra 1 Honors, Algebra 2
- Quantum Mechanics

Ross Mathematics Program, Columbus, Ohio USA

- *Junior Counselor* **June - August 2008**
- *Counselor* **June - August 2009/2010/2012**

Research Assistantships and Assisting Research

Illinois Geometry Lab Graduate Mentor **Spring and Fall 2018**
University of Illinois at Urbana-Champaign, Katelyn Leisman
Simulating Multi-Soliton Solutions to Non-Linear Wave Equations.

Illinois Geometry Lab Graduate Mentor **Spring 2019**
University of Illinois at Urbana-Champaign, Thomas Nevins
Interactive Tools for Integrable Dynamic Systems.

Northeastern Undergraduate Research Mentor **Spring 2020-Summer 2021**
Calculating examples of Quasi-Hamiltonian Reduction.

Leading Undergraduate Learning Lean Seminar **Spring 2022 - *Present***
Leading undergraduates in mathematics and computer science to contributing to Leanproject's mathlib `https://github.com/mpenciak/Lean-Seminar-Sp2022`.

Co-organizer of the Northeastern Math REU **Summers 2021, 2022**
Helping graduate students organize research groups with a small number of undergrads to work on novel mathematics research.

Honors and Awards

Kuo-Tsai Chen Prize for Geometry and Analysis, 2017
Arthur S. Gale Award for Achievement in Mathematics, 2012

Publications and projects

Martin T. Luu and Matej Penciak. Langlands Parameters of Quivers in the Sato Grassmannian. *Comm. Math. Phys.*, 357(2):775-789,2018.

Matej Penciak. Spectral Description of the Spin Ruijsenaars-Schneider System. arXiv:math/1909.08107 *submitted*.

Formalization of aspects of homological algebra, commutative algebra, and algebraic geometry in Lean `https://github.com/mpenciak/flat_modules`

Conference Presentations

Poster "Bispectrality in Calogero Moser and Ruijsenaars Schneider Systems" at Summer School on Geometric Representation Theory. Jul 9-13, 2018. IST Austria.

"Spectral Description of the Ruijsenaars-Schneider System" at AMS Special Session on Modern Trends in Integrable Systems. Oct 20-21, 2018. University of Michigan.

"Spectral Description of the Ruijsenaars-Schneider System" at AMS Special Session on Geometric Methods in Representation Theory. Nov 9-10, 2019. UC Riverside.

"Spectral Description of the Ruijsenaars-Schneider System" at CMS Winter Meeting, session on Algebraic Geometry and Representation Theory. Dec 6-9, 2019.

Invited Talks

Joint CUHK-Harvard-YMSC Differential Geometry Seminar, Fall 2020

Graduate Algebraic Geometry Seminar at UIUC, Fall 2020

Algebraic Geometry Seminar at UC Davis, Spring 2020.

Relevant Skills

Programming language proficiency - Lean, Python, and Haskell

Scientific computing libraries - Scipy, Matplotlib, introductory NetworkX

Quantum computing and machine learning libraries - Qiskit, introductory Pytorch, and Pandas

Computer algebra software - Mathematica, Maple, MATLAB

Markup language proficiency - LaTeX, HTML