Yining Zhang

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Employment

Lecturer 01/2024–present
Singapore University of Technology and Design, Singapore

Research Fellow 09/2022–01/2024
Singapore University of Technology and Design, Singapore

Visiting Assistant Professor 08/2019–05/2022
Department of Mathematics, University of Colorado, Boulder, CO, USA

Education

Ph.D. in Mathematics 08/2013–08/2019
Indiana University, Bloomington, IN, USA
Thesis title: Cyclic pairings and noncommutative Poisson structures
Thesis Advisor: Ajay C. Ramadoss

Research Interests

Homological algebra, homotopical algebra, and noncommutative geometry
Applications of homological algebra to artificial intelligence (AI)

Publications & Preprints

1. *Curved Koszul duality and cyclic (co)homology.* Preprint (2021), `arXiv:2110.04893`.
2. *Hodge decomposition of string topology* (joint with Yu. Berest and A. C. Ramadoss). Forum Math. Sigma **9** (2021), e33.
3. *Cyclic pairings and derived Poisson structures* (joint with A. C. Ramadoss). New York J. Math. **25** (2019), 1–44.
4. *Dual Hodge decompositions and derived Poisson brackets* (joint with Yu. Berest and A. C. Ramadoss). Selecta Math. (N.S.) **23** (2017), no. 3, 2029–2070.

Invited Talks

1. Curved Koszul duality and cyclic (co)homology March 2022
   Topology Seminar,
   Bowling Green State University, Bowling Green, OH, USA
2. Curved Koszul duality and cyclic (co)homology Nov. 2021
   Deformation Theory Seminar,
   University of Pennsylvania, Philadelphia, PA, USA
3. Hodge decomposition of string topology April 2020
   Topology Seminar,
   Purdue University, West Lafayette, IN, USA
4. Derived Poisson structures and derived representation schemes Dec. 2018
   Geometry and Topology Seminar,
   Sichuan University, Chengdu, China
5. Derived Poisson structures and derived representation schemes Dec. 2018
   Postdoc Seminar,
   BICMR, Peking University, Beijing, China

6. Dual Hodge decompositions and derived Poisson brackets — June 2017
   Geometry and Physics Seminar,
   Yau Mathematical Sciences Center, Tsinghua University, Beijing, China
7. Dual Hodge decompositions and derived Poisson brackets — June 2017
   Algebra Seminar,
   Capital Normal University, Beijing, China

Seminar Talks

1. Curved Koszul duality and cyclic (co)homology — Nov. 2021
   Noncommutative Geometry Seminar,
   University of Colorado, Boulder, CO, USA
2. Hodge decomposition of string topology — April 2020
   Noncommutative Geometry Seminar,
   University of Colorado, Boulder, CO, USA
3. The Kontsevich-Rosenberg principle for bi-symplectic forms — April 2018
   Graduate Student Poisson Seminar,
   Indiana University, Bloomington, IN, USA
4. Poisson homology and cohomology — February 2018
   Graduate Student Poisson Seminar,
   Indiana University, Bloomington, IN, USA
5. Graded and DG Poisson algebras — January 2018
   Graduate Student Poisson Seminar,
   Indiana University, Bloomington, IN, USA
6. Poincaré duality CDGA and Hochschild homology of coalgebras — Nov. 2017
   Graduate Student String Topology Seminar,
   Indiana University, Bloomington, IN, USA
7. Smoothness: Commutative vs Non-commutative — October 2016
   Graduate Student Algebra Seminar,
   Indiana University, Bloomington, IN, USA

Teaching Experience

Singapore University of Technology and Design, Singapore
Modeling Space and Systems
Spring 2024

University of Colorado, Boulder, CO, USA
Homological Algebra
Spring 2022
Introduction to Probability Theory
Fall 2021, Spring 2021, Fall 2020, Spring 2020
Linear Algebra for Non-math Majors
Spring 2021, Spring 2020, Fall 2019
Linear Algebra for Math Majors
Spring 2022, Summer 2020

Indiana University, Bloomington, IN, USA
Pre-Calculus Math with Trigonometry
Fall 2018
Pre-Calculus Math
Fall 2017
Calculus I Recitation
Fall 2016 and Fall 2015

Mentorship

Research Experiences for Undergraduates — Summer 2021
Derived Poisson Structure on $\mathfrak{sl}_2$
(2 undergraduate students and 1 high school student)
University of Colorado, Boulder, CO, USA

Directed Reading Program — Spring 2017
Lie algebras
(1 undergraduate student)
Indiana University, Bloomington, IN, USA

Honors and Awards

Glenn Schober Memorial Travel Award — 2015
Indiana University, Bloomington, IN, USA

Robert E. Weber Memorial Award — 2014
(given annually to the best students on written qualifying exams)
Indiana University, Bloomington, IN, USA

College of Arts and Sciences Top Up Award — 2013
Indiana University, Bloomington, IN, USA

Referee for

- New York Journal of Mathematics

Service

Organizer of Noncommutative Geometry Seminar — Spring 2020–Spring 2022
University of Colorado, Boulder, CO, USA

Organizer of Graduate Student Poisson Seminar — Spring 2018
Indiana University, Bloomington, IN, USA

Co-organizer of Graduate Algebra Seminar — Fall 2015
Indiana University, Bloomington, IN, USA

Languages

Chinese: **Native**
English: **Fluent**