Araminta Amabel

CONTACT INFORMATION

Department of Mathematics
The University of Texas at Austin
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Citizenship: *United States*

RESEARCH INTERESTS

Factorization algebras and their relationships with quantum field theory, elliptic genera, operads, and deformation quantization.

EMPLOYMENT

University of Texas at Austin

NSF Postdoctoral Fellow, September 2022-ongoing

Sponsor: David Ben-Zvi

EDUCATION

Massachusetts Institute of Technology

Ph.D. in Mathematics, May 2022

Advisor: Michael Hopkins

Northwestern University

B.A. in Mathematics, June 2017

Advisor: John Francis

PUBLICATIONS AND PREPRINTS

Genera from an algebraic index theorem for supermanifolds. Preprint available at arXiv:2204.05920, April. 2022.

Deformation quantization for supermanifolds via Gelfand-Kazhdan descent. Preprint available at arXiv:2110.01007, Oct. 2021.

Differential cohomology: categories, characteristic classes, and connections. With Arun Debray and Peter Haine. Preprint available at arXiv:2109.12250, Sep. 2021.

Poincaré/Koszul duality for general operads. To appear in Homology, Homotopy, and Applications. Preprint available at arXiv:1910.09076, Oct. 2019.

Lectures on factorization homology, ∞-categories, and topological field theories. Contributor with Artem Kalmykov, and Lukas Müller. Authored by Hiro Lee Tanaka. In SpringBriefs in Mathematical Physics. ISBN: 978-3-030-61163-7. DOI: 10.1007/978-3-030-61163-7

RESEARCH FUNDING

National Science Foundation Mathematical Sciences Postdoctoral Research Fellowship. 2022-ongoing.

National Science Foundation Graduate Research Fellowship. 2017-2022.

Akamai Presidential Fellowship. 2017-2018.

Invited Talks

Tbd. Topology Seminar at Notre Dame. (March 28, 2023)

Tbd. Geometry and Physics Seminar at Boston University. (December 7, 2022)

Genera from Supersymmetric Mechanics. Geometry Seminar at UT Austin. (April 21, 2022)

Genera from Supersymmetric Mechanics. Topics in Algebraic and Geometric Topology at the AMS Sectional Meeting at Purdue University. (March 27, 2022)

Deformation theory and supersymmetric quantum mechanics. Algebra and Topology Seminar of the University of Copenhagen. (December 3, 2021)

Towards a Construction of L-Theory via Supersymmetric Mechanics. Representation Theory Seminar at UMass Amherst. (November 8, 2021)

Deformation theory and supersymmetric quantum mechanics. Topology Seminar at UChicago-Northwestern. (October 26, 2021)

Deformation theory and supersymmetric quantum mechanics. Algebraic Topology Seminar at UCLA. (October 22, 2021)

Deformation theory and supersymmetric quantum mechanics. Topology Seminar at UC San Diego. (October 19, 2021)

Generalised Lie algebras in Derived Geometry conference in Utrecht. (June 2020 - postponed due to the pandemic)

Homotopy Theory Seminar at Ohio State University. (April 23, 2020 - postponed due to the pandemic)

Contributed Talks

Obstructions to quantizing equivariantly. MIT Juvitop Seminar. (November 2021)

Factorization Algebras, Symmetries, and Quantization. MIT Juvitop Seminar. (September 2021)

CM classes exhaust symplectic K-theory. MIT Juvitop Seminar. (March 2021 - Online)

Introduction to the Cobordism Hypothesis after Hopkins-Lurie. MIT Juvitop Seminar. (September 2020 - Online)

Cobordism Categories. MIT Pre-Talbot Seminar. (March 2021)

Deligne Cup Product and Differential Fiber Integration. MIT Juvitop Seminar. (November 2019)

Examples of Differential Cohomology Theories. MIT Juvitop Seminar. (October 2019)

Proof of Poincaré/Koszul Duality. Miniature Seminar on Factorization Homology. (March 2019)

The Cardinality Filtration and the Ran Space. Miniature Seminar on Factorization Homology. (March 2019)

How and why to use factorization homology. Miniature Seminar on Factorization Homology. (March 2019)

Teaching

Winter	2021	Mathematics Lecture Series, 18.095, TA
Fall	2020	Calculus, 18.01, TA

Advising

Fall 2020 - **Mentor**, Grad-Undergrad Math Mentoring Initiative
Mentored four undergraduates applying to math grad school

Fall 2020 **Assistant mentor**, MIT Undergraduate Research Opportunities Program
Mentored an undergraduate on a research project about Betti numbers of configuration spaces with Haynes Miller

Summer 2020 **Mentor**, MIT SPUR+, Summer Program in Undergraduate Research Plus
Mentored an undergraduate on configuration spaces

Winter 2020 **Mentor**, MIT Directed Reading Program
Mentored two undergraduates in a reading course on K-Theory

Summer 2017 **Mentor**, UChicago Mathematics REU
Mentored two undergraduates on knots and Chern-Weil theory.

Organization and Outreach

Fall 2022	**Organizer**, UT Austin Geometry Seminar
Fall 2021	**Co-organizer**, MIT Juvitop Seminar: Factorization Algebras and the Quantum Noether Theorem
Spring 2021	**Co-organizer**, MIT Juvitop Seminar: The Galois Action on Symplectic K-Theory
Fall 2020 -	**Co-founder and co-organizer**, MIT Grad-Undergrad Math Mentoring Initiative (GUMMI) *Established a one-on-one mentoring program, designed a website with advice and information, organized many events including panels and social gatherings.*
Fall 2020	**Co-organizer**, MIT Juvitop Seminar: The Cobordism Hypothesis *Ran concurrent discussion sections and wrote problem sets.*
Spring 2020	**Co-organizer**, Juvitop Pre-Talbot Seminar: Chromatic Homotopy Theory
Fall 2019	**Organizer**, MIT Topology Seminar
Fall 2019	**Co-organizer**, MIT Juvitop Seminar: Differential Cohomology
Spring 2019	**Co-organizer**, Juvitop Pre-Talbot Seminar: Moduli Spaces of Manifolds
Winter 2019	**Co-organizer**, A Miniature Course on Factorization homology
Fall 2015	**Founder**, Northwestern University AWM Chapter