

Arun Debray

GRADUATE STUDENT, MATHEMATICS

Department of Mathematics, The University of Texas at Austin

a.debray@math.utexas.edu | ma.utexas.edu/users/a.debray

Education

The University of Texas at Austin

PH.D. IN MATHEMATICS

Expected 2021

Advisor: Daniel Freed

Stanford University

B.S. IN MATHEMATICS WITH HONORS

2015

Thesis: “Modular Representation Theory and the CDE Triangle,” advised by Akshay Venkatesh.

Teaching experience

Supplemental Instruction (SI) Teaching Assistant

THE UNIVERSITY OF TEXAS AT AUSTIN

Fall 2016, Fall 2017, Fall 2018

- M408N: Differential Calculus for Science
- M408L: Integral Calculus
- Taught in a “flipped classroom,” teaching sections, holding office hours, and participating in the Sanger Learning Center SI Program.

Directed Reading Program Mentor

THE UNIVERSITY OF TEXAS AT AUSTIN

Spring 2016 – Present

- Mentored undergraduates on projects including lattice-based cryptography, point-set topology, symplectic geometry, and cobordism.

Math 50 Series Tutor

STANFORD UNIVERSITY

Winter 2013 – Spring 2015

- Tutored linear algebra, multivariable calculus, and differential equations.

Other experience

Software Engineering Internship, Dropbox

SAN FRANCISCO, CA

Summer 2015

Research Internship, AT&T Foundry

PALO ALTO, CA

Summer 2014

Computer Science Undergraduate Research Internship (CURIS), Stanford University

PALO ALTO, CA

Summer 2013

Service

Homotopy theory learning seminar

Fall 2018

Co-organized a learning seminar on the Adams-Novikov spectral sequence.

Saturday Morning Math Group

Fall 2018

Gave a talk to high schoolers about the mathematics of SET.

Characteristic classes mini-course

Summer 2017, Summer 2018

Ran a week-long introduction to characteristic classes for grad students.

Gromov-Witten theory learning seminar

Spring 2018

Co-organized a learning seminar on Gromov-Witten theory.

Quantum topology and categorification learning seminar

Spring 2017

Co-organized a learning seminar on Chern-Simons theory, the Jones polynomial, and Khovanov homology.

Student geometry seminar

Fall 2016, Fall 2017

Organizer.

UT Math Club

Fall 2015, Spring 2016, Fall 2016

Spoke at UT Austin's undergraduate math club on SET and maximal caps; cohomology; and Frobenius algebras and TQFTs.

A-Star Math Tournament

2015

Head proctor and co-organizer.

Berkeley Math Tournament

2012, 2015

Proctor and grader.

Stanford Math Tournament

2012, 2013, 2014

Head proctor, proctor, and problem writer.

American Regions Math League (ARML)

2012

Coached the San Francisco-Bay Area A2 team.

Honors, awards, and fellowships

S17, S18	Geometry Research and Training Grant (RTG) Fellowship , UT Austin Department of Mathematics
Fall 2017	Honorable mention, Visualizing Science Competition , UT Austin College of Natural Sciences
Fall 2016	Prelim Excellence Award , UT Austin Department of Mathematics
F15 – S16	Geometry Research and Training Grant (RTG) Fellowship , UT Austin Department of Mathematics
Spring 2013	Boothe Prize for Excellence in First-Year Writing , Stanford University

Talks

August 2018	The low-energy TQFT of the generalized double semion model , Conference on Higher Algebra and Mathematical Physics, Perimeter Institute
November 2017	The low-energy TQFT of the generalized double semion model , Contributed talk, Texas Analysis and Mathematical Physics Symposium
January 2017	Lattice models and TQFTs , AT&T Foundry Palo Alto weekly seminar series

Conferences attended

April 2016	Graduate Student Topology and Geometry Conference, University of Indiana
April 2017	Conference on invertible objects and duality in derived algebraic geometry and homotopy theory, University of Regensburg
April 2017	Texas Algebraic Geometry Symposium, Rice University
June 2017	Strongly Correlated Topological Phases of Matter, Stony Brook
July 2017	Homotopy Theory: tools and applications, UIUC
August 2017	Topological and Geometric Methods in QFT, Montana State University
November 2017	Texas Analysis and Mathematical Physics Symposium, UT Austin
February 2018	Texas Geometry and Topology Conference, University of Houston
April 2018	Texas Algebraic Geometry Symposium, Texas A&M University
July 2018	The topology and geometry of low-dimensional manifolds: a celebration of the mathematics of Bob Gompf, UT Austin
August 2018	Conference on Higher Algebra and Mathematical Physics, Perimeter Institute

Publications and Preprints

1. (with Sam Gunningham) The Arf-Brown TQFT of Pin^- Surfaces. In *Topology and Quantum Theory in Interaction*, Contemp. Math. volume 718, pp. 49–87. 2018. ([arXiv:1803.11183](https://arxiv.org/abs/1803.11183)).
2. The low-energy TQFT of the generalized double semion model. ([arXiv:1811.03583](https://arxiv.org/abs/1811.03583)).