

Jackson Van Dyke

Office: PMA 11.156

University of Texas, Austin
Department of Mathematics,
Phone: (512) 471-7711
2515 Speedway, Stop C 1200
Austin, Texas 78712-1202

Email: vandyke@math.utexas.edu
Homepage: math.utexas.edu/users/vandyke

Education

University of Texas, Austin Fall 2019 - Spring 2024
Ph.D. in Mathematics (in progress)

University of California, Berkeley Fall 2015 - Spring 2019
B.A. in Mathematics
Honors thesis title: Non-sectorial gluing of Fukaya categories

Publications

1. Jackson Van Dyke. Projective symmetries of three-dimensional TQFTs. *In preparation*, 2023
2. Jackson Van Dyke. Twice-categorified integral transforms and projective symmetries. *In preparation*, 2023
3. David Ben-Zvi and Jackson Van Dyke. **Book:** *Between electric-magnetic duality and the Langlands program*. In preparation, 2023. Available online.
4. Antonio Alfieri and Jackson Van Dyke. An introduction to knot Floer homology and curved bordered algebras. *Periodica Mathematica Hungarica*, 80(2):211–236, 2020

Physics publications:

1. A. Schmah, N. Buechel, S. Garrett, M. Lomnitz, X. Sun, J. Van Dyke, J. Xu, and J. Zhang. Radiation Hardness Test of Eljen EJ-500 Optical Cement. *ArXiv e-prints*, March 2017
2. J. Van Dyke, L.A. Bernstein, and R. Vogt. Parameter optimization and uncertainty analysis of freya for spontaneous fission. *Nuclear Instruments and Methods in Physics Research Section A: Accelerators, Spectrometers, Detectors and Associated Equipment*, 922:36 – 46, 2019

Invited Talks

1. Perimeter Institute July 6, 2023
An analogue of the spin extension for fusion categories
2. Simons Collaboration on Global Categorical Symmetries April 24, 2023
Topological symmetries and the Drinfeld center
3. Academia Sinica (Taipei, Taiwan) Representation theory Seminar March 24, 2022
Projectivity, polarization, and a higher Weil representation
4. UC Davis Sr. Geometry/Topology Seminar April, 2022
Spin/Metaplectic extensions for finite 3-dimensional TFTs

Honors and Awards

John and Anne Crawford Scholarship:

Fall 2021-Spring 2022

This scholarship gives special consideration to law and math students. Donor criteria: Scholastic merit including artistic, musical and creative merit, and leadership roles in current or prior university or industry settings.

Frank Gerth III teaching excellence awards:

Fall 2019-Spring 2020

Departmental awards which are “given each year to students who are proven teaching assistants or assistant instructors.”

NSF Graduate Research Fellowship Program (honorable mention):

Spring 2020

Dean’s Honors List - College of Letters and Science:

UC Berkeley

Spring 2018-2019

The Dean’s Honors List recognizes outstanding academic achievement of students with semester GPA in the top 10% of L&S undergraduates.

International Dean’s Summer Scholarship:

University College London

Summer 2017

I spent the summer of 2017 doing research under Professor Michael Singer with support from the International Dean’s Summer Scholarship from UCL. This is analogous to an REU opportunity in the United States.

Teaching Experience

Graduate prelim course grader:

Algebra I

University of Texas, Austin

Fall 2022, Fall 2023

This preliminary course for graduate students covers group theory, as well as rings and modules. I held office hours, graded assignments, and prepared solutions for the students.

Assistant instructor (IBL format):

Topology I

University of Texas, Austin

Fall 2020, Spring 2022

This course implemented the **inquiry based learning (IBL)** method. This is a successful contemporary teaching technique which is particularly well-represented at UT. The class was separated into two halves, which would meet separately. I taught one half, and the other assistant taught the other half. **My responsibilities included:** independently holding class over Zoom, grading exams, and managing an IBL-based in-class discussion every day. I developed my IBL-style teaching techniques with the help of Professor Michael Starbird and other IBL resources at UT.

Teaching assistant:

Multivariable Calculus, Series, Sequences

University of Texas, Austin

Fall 2019, Spring 2020

I held section, wrote and administered quizzes, graded assignments, and held office hours.

Undergraduate Student Instructor:

Calculus, ODEs, Linear Algebra

University of California, Berkeley

Fall 2018

I held section, wrote and administered quizzes, graded assignments, and held office hours.

Summer Program in Nuclear Physics:

University of Oslo, Oslo, Norway

May 2017

I helped develop the curriculum for, and teach a course concerning the physics of nuclear fission and our ability to model it. This happened in conjunction with my research in theoretical nuclear physics developing the fission event algorithm FREYA.

Service

Sunday Morning Math Group Coordinator:

UT Austin

Spring 2021-Fall 2021

The Sunday Morning Math Group (SMMG) is a UT sponsored outreach program aimed at junior high and high school students. I was responsible for:

- organizing and hosting eight public “general sessions” for the community each semester, and
- organizing and proctoring two cycles of the “American Math Contest” (8, 10, and 12) and the “American Invitational Mathematics Examination” for those who qualified.

The “general sessions” are comprised of a talk given by a faculty member or graduate student, oftentimes in conjunction with an exercise session. Throughout 2021 there were a total of 9 exam sessions, during which I administered a total of **600 exams**. My time as the SMMG coordinator coincided with the COVID-19 pandemic, meaning I had the extra experience of arranging an online version of all of the above events. I also gave a talk for the program in Spring 2022.

Directed Reading Program:

UT Austin

Spring 2020-Fall 2021, Fall 2022

DRP pairs undergraduate students with graduate student mentors to undertake independent projects in mathematics.

Seminars Organized

Jr. Geometry Seminar

UT Austin

Spring 2021

Jr. Geometry and String Theory Seminar

UT Austin

Fall 2022