

ANDREA BOURQUE

CONTACT

E-mail andrea.bourque72@gmail.com

EDUCATION

- **Ph.D. in Mathematics (In Progress)** 2024-present
University of Chicago | *Chicago, Illinois, USA*
- **M.S. in Mathematics** 2022-2024
Louisiana State University | *Baton Rouge, Louisiana, USA*
 - Advisor: Pramod Achar
- **B.S. in Mathematics** 2020-2022
Louisiana State University | *Baton Rouge, Louisiana, USA*
 - Graduated with *summa cum laude*; *college honors*; *university medal*
 - Honors Thesis: "*GL(1|1) Graph Connections*"
 - Minor in Physics

HONORS

- Awards**
- 2022 Betti and Robert Giles Senior Mathematics Award
 - 2020 Eric Candell Excellence in Physics Award
 - 2019 AMC 12 A Distinguished Honor Roll
- Scholarships**
- 2021 Peg and Tom Madden Mathematics Research Scholarship

PAPER

A. Bourque and A. Zeitlin (2023). "Flat $GL(1|1)$ -connections and fatgraphs". In: *Journal of Geometry and Physics* 191. URL: <https://arxiv.org/abs/2208.08033>.

TALKS

- **Representation Theory and Related Geometry: Progress and Prospects** 2024
University of Georgia, Athens, GA
 - Talk: "Global Schubert varieties for GL_n ."
- **Oberwolfach Workshop 2331 - Teichmüller Theory** 2023
Mathematisches Forschungsinstitut Oberwolfach, Germany
 - Talk: "Flips on $GL(1|1)$ Graph Connections."
- **Bayou Arithmetic Research Days 1** 2022
LSU, Baton Rouge, Louisiana
 - "Lightning" talk: "Geometry from Partitions."

- **UH-LSU-TAMU Undergraduate Math Research Conference** 2022
University of Houston, Texas
 - Talk: " $GL(1|1)$: A Primer in Supermathematics."
- **Symposium for Undergraduates in the Mathematical Sciences** 2021,2022
Online
 - Talks: " $GL(1|1)$ Graph Connections" in both years.
- **LSU Dean's Circle Science & Spirits** 2021
LSU Health Medical Education & Innovation Center, Baton Rouge, Louisiana
 - Poster: " $GL(1|1)$ Graph Connections", for LSU College of Science donors.
- **LSU Discover Day** 2021
Online
 - Talk: " $GL(1|1)$ Graph Connections."
- **TX-LA Undergraduate Math Conference** 2020
Online
 - Talk: "Teichmüller theory and graph connections for $G = GL(1|1)$."
- **Texas Undergraduate Math Conference** 2019
UT Tyler, Texas
 - Talk: "Hyperbolic Space, Möbius Transformations, and Teichmüller Theory."

PROGRAMS ATTENDED

- **Arizona Winter School** 2024
Project: Chow Motives of Abelian Varieties | University of Arizona, Tuscon
- **Bayou Arithmetic Research Days 3** 2023
LSU, Baton Rouge, Louisiana
- **Preliminary Arizona Winter School** 2023
Abelian Varieties over Finite Fields | Online
- **MSRI/SLMath 992 - Derived Algebraic Geometry** 2023
UC Berkeley, California
- **Southern Regional Number Theory Conference** 2022-2024
LSU, Baton Rouge, Louisiana
- **Western Algebraic Geometry Symposium** 2022
UC Riverside, California

TEACHING

- **Directed Reading Program** 2023
LSU, Baton Rouge, Louisiana
 - Advised an undergraduate student in learning representation theory of finite groups.

- **MATH 7001 and 7002** 2022-2023
Communicating Math I and II | LSU, Baton Rouge, Louisiana
 - 15 minute lecture on trigonometric identities to an LSU trigonometry class.
 - 50 minute lecture on hyperbolic trigonometric functions to an LSU calculus I class.
 - 15-20 minute introductory lecture on manifolds, differential forms, and Stoke's theorem to first year LSU graduate students in mathematics. The lecture was accompanied by a 10 page expository paper on the same topic.

- **Teacher and Personal Tutor** 2021-2022
for SpiderSmart's Katy, Texas branch | Online
 - AMC 8 competition preparation course, twice.
 - Several sections of a course to prepare students to test out of 6th grade math.
 - Course in precalculus.
 - Privately tutored students of various levels, ranging from elementary school to AP Calculus BC.

- **Upper Level Math Teacher** 2020-2021
for Louisiana Math Circle Competition Team | Online
 - Taught skills, concepts, and strategies for the AIME competition.

- **Peer Tutor in Math and Physics** 2019-2020
LSMSA, Natchitoches, Louisiana

- **GED Math Tutor** 2018-2019
LSMSA, Natchitoches, Louisiana
 - Helped under-privileged students prepare to get a GED.

LEADERSHIP

- **Assistant** 2021-2022
for Louisiana Math Circle Competition Team | Online
 - Created homework assignments and mock tests.
 - Proctored competitions.

- **Math Club President** 2018-2020
at Louisiana School for Math, Science, and the Arts | Natchitoches, LA
 - Gave lectures and corresponding problem sets for introductory topics in logic, proofs, and competition math.
 - Organized participation in competitions, such as "Who Wants to Be a Mathematician" and LSU's annual math competition.
 - Started a math tutoring center after our original peer tutoring center went out of use.

SKILLS

Coding Languages	Mainly Python; past experience with C++, C#, and JS.
CAS	Sagemath, Singular, Mathematica, MATLAB, and MAGMA.
Other Tech	LaTeX, Git, Linux, SSH, Vi/Vim, Emacs, Dhall, and Arduino.