

ANDREA

BOURQUE

CONTACT INFO

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EDUCATION

M.S. in Mathematics **2022-2024**

Louisiana State University | Baton Rouge, Louisiana, USA

- In progress
- Working with 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

ACHIEVEMENTS

- | | |
|---------------------|---|
| Awards | <ul style="list-style-type: none">• 2022 Betti and Robert Giles Senior Mathematics Award• 2019 AMC 12 A Distinguished Honor Roll |
| Scholarships | <ul style="list-style-type: none">• 2021 Peg and Tom Madden Mathematics Research Scholarship |

PAPERS

- | | |
|---------------------------|--|
| Published Articles | A. Bourque and A. Zeitlin (2023). "Flat $GL(1 1)$ -connections and fatgraphs". In: <i>Journal of Geometry and Physics</i> 191. URL: https://arxiv.org/abs/2208.08033 . |
| Preprints | A. Bourque and P. Achar (2023). "Global Schubert Varieties for GL_n ". |

TALKS GIVEN

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|---|-------------|
| Texas Undergraduate Math Conference
<i>UT Tyler, Texas</i> | 2019 |
| <ul style="list-style-type: none">• Gave a talk titled "Hyperbolic Space, Möbius Transformations, and Teichmüller Theory." | |
| TX-LA Undergraduate Math Conference
<i>Online</i> | 2020 |
| <ul style="list-style-type: none">• Gave a talk titled "Teichmüller theory and graph connections for $G = GL(1 1)$." | |

LSU Discover Day <i>Online</i>	2021
<ul style="list-style-type: none"> Gave a talk titled "$GL(1 1)$ Graph Connections." 	
LSU Dean's Circle Science & Spirits <i>LSU Health Medical Education & Innovation Center, Baton Rouge, Louisiana</i>	2021
<ul style="list-style-type: none"> Presented my poster on $GL(1 1)$ Graph Connections to LSU College of Science donors. 	
Symposium for Undergraduates in the Mathematical Sciences <i>Online</i>	2021,2022
<ul style="list-style-type: none"> Gave talks titled "$GL(1 1)$ Graph Connections" in both years. 	
UH-LSU-TAMU Undergraduate Math Research Conference <i>University of Houston, Texas</i>	2022
<ul style="list-style-type: none"> Gave a talk titled "$GL(1 1)$: A Primer in Supermathematics." 	
Bayou Arithmetic Research Days 1 <i>LSU, Baton Rouge, Louisiana</i>	2022
<ul style="list-style-type: none"> Gave a "lightning talk" on Schubert varieties and partitions. 	
Oberwolfach Workshop 2331 - Teichmüller Theory <i>Mathematisches Forschungsinstitut Oberwolfach, Germany</i>	2023
<ul style="list-style-type: none"> Gave a talk titled "Flips on $GL(1 1)$ Graph Connections." 	

PROGRAMS ATTENDED

Southern Regional Number Theory Conference <i>LSU, Baton Rouge, Louisiana</i>	2022,2023
Western Algebraic Geometry Symposium <i>UC Riverside, California</i>	2022
MSRI/SLMath 992 - Derived Algebraic Geometry <i>UC Berkeley, California</i>	2023
Preliminary Arizona Winter School <i>Abelian Varieties over Finite Fields Online</i>	2023
Bayou Arithmetic Research Days 3 <i>LSU, Baton Rouge, Louisiana</i>	2023

TEACHING

GED Math Tutor <i>LSMSA, Natchitoches, Louisiana</i>	2018-2019
<ul style="list-style-type: none"> Helped under-privileged students prepare to get a GED. 	
Peer Tutor in Math and Physics <i>LSMSA, Natchitoches, Louisiana</i>	2019-2020
Upper Level Math Teacher <i>for Louisiana Math Circle Competition Team Online</i>	2020-2021
<ul style="list-style-type: none"> Taught skills, concepts, and strategies for the AIME competition. 	

Teacher and Personal Tutor**2021-2022***for SpiderSmart's Katy, Texas branch | Online*

- Taught a course to prepare students for the AMC 8 competition twice.
- Taught several sections of a course to prepare students to test out of 6th grade math.
- Taught a course in precalculus.
- Privately tutored students of various levels, ranging from elementary school to AP Calculus BC.

MATH 7001 and 7002**2022-2023***Communicating Math I and II | LSU, Baton Rouge, Louisiana*

- Gave a 15 minute lecture on trigonometric identities to an LSU trigonometry class.
- Gave a 50 minute lecture on hyperbolic trigonometric functions to an LSU calculus I class.
- Gave a 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.

Directed Reading Program**2023***LSU, Baton Rouge, Louisiana*

- Advised an undergraduate student in learning representation theory of finite groups.