

Astrid Arena Olave Herrera

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EDUCATION

- Ph.D in Mathematics** 2021 - Present
Michigan State University
 Advisor: Elizabeth Munch
- M.Sc in Applied Mathematics** 2021
Universidad Nacional de Colombia
 Thesis: Revealing brain network dynamics during the emotional state of suspense using topological data analysis
 Advisor: José Perea. Coadvisor: Francisco Gomez
- B.Sc with Honors in Mathematics** 2018
Universidad Nacional de Colombia
 Thesis: Persistent homology analysis of RNA secondary structures
 Advisor: Gustavo N. Rubiano

RESEARCH INTERESTS

- Topological data analysis:
Foundations and applications
- Algebraic topology
- Computational biology

TEACHING EXPERIENCE

- Matrix Algebra with
Computational Applications (MTH 314)** Summer 2023
Michigan State University
 Instructor for section 101
- Calculus II (MTH 133)** Spring 2023
Michigan State University
 Teaching assistant for sections 013,018 and 024
- Calculus I** Fall 2022
Michigan State University
 Teaching assistant for sections 019,021 and 024

Mathematics Learning Center

Spring 2022

Michigan State University

Tutor

Survey of Calculus I (MTH 124)

Fall 2021

Michigan State University

Teaching assistant for Lecture 1

Tutor of Círculos Matemáticos

2019 - II

Universidad Nacional de Colombia

Guided enthusiastic high school students about mathematics into the experience of being a mathematician

Integral calculus

2018 - I

*Universidad Nacional de Colombia***PRESENTATIONS**

2. Olave, A. A., *Revealing brain network dynamics during the emotional state of susoense using topological data analysis*, Short talk presented at II Workshop virtual SIPAIM, 2021
1. Olave, A. A., *Persistent homology analysis of rna secondary structures*, Poster session presented at XXII Colombian Congress of Mathematics, 2019, Popayán, Colombia

PAPERS

1. Georgiou, K., Jiang, A. J., Lee, E., Olave, A. A., Seong, I., and Upadhyaya, T., *Lift & project systems performing on the partial-vertex-cover polytope*, Theoretical Computer Science **820** (2020), 1–16

WORK EXPERIENCE

Fresh eye reviewer

July 2019

Instituto Colombiano para la Evaluación de la Educación - Icfes

Revised questions for Saber 11 exam (Colombia's high school exit examination)

HONORS AND AWARDS

Scholarship for complete tuition for M.Sc programs

2019

*Universidad Nacional de Colombia***Exemption from payment for best average**

2013-2018

Universidad Nacional de Colombia

EXTRACURRICULAR ACTIVITIES

Sin Medida inter-university catholic community 2018-2021
Leadership team member

Universidad Nacional women's soccer team 2014-2021
Goalkeeper