

# Nickolas A. Castro

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## CONTACT INFORMATION

Rice University  
Department of Mathematics  
HBH 456  
Houston, TX 77005

*Citizenship:* USA  
*E-mail:* [ncastro.math@rice.edu](mailto:ncastro.math@rice.edu)  
*Website:* [www.nickcastromath.com](http://www.nickcastromath.com)

## EMPLOYMENT

**Instructor** July 2021 - Present  
Rice University, Department of Mathematics

**Visiting Assistant Professor** July 2018 - July 2021  
University of Arkansas, Department of Mathematical Sciences

**UC Davis Chancellor's Postdoctoral Fellow** August 2016 - July 2018  
University of California, Davis, Department of Mathematics

**Postdoctoral/Lead Mentor** July 2016, July 2017, July 2019  
Camp Euclid, High School Mathematics Research Camp

## EDUCATION

The University of Georgia, Athens, Georgia USA  
Ph.D., Mathematics. May 2016

The University of Georgia, Athens, Georgia USA  
Master of Arts, Mathematics. May 2012

California State University Northridge, Northridge, California USA  
Bachelor of Arts, Mathematics. December 2008

Pierce College, Woodland Hills, California USA  
Associate of Arts, Liberal Arts. June 2006

## PUBLICATIONS AND PREPRINTS

1. *Obstructing Relative De-stabilizations of Trisections*  
with Thomas Kindred  
In preparation.
2. *Relative Group Trisections*  
with Jason Joseph and Patrick McFaddin  
In preparation.
3. *Camp Euclid: A Research Experience for Youth – in a Virtual Environment*  
with Juliette Benitez and David T. Gay.  
AMS Notices 67 (11): 1739-1742, 2020  
<https://www.ams.org/journals/notices/202011/rnoti-p1740.pdf>
4. *The Relative  $\mathcal{L}$ -invariant of a Compact 4-manifold with Boundary*  
with Gabriel Islambouli, Maggie Miller, and Maggy Tomova  
arXiv:1908.05371, 2021. Accepted, Pacific Journal of Mathematics
5. *Trisections of 4-manifolds via Lefschetz fibrations*  
with Burak Ozbagci  
Mathematical Research Letters 26(2): 383-420, 2019.
6. *On Dividing a Rectangle*  
with Robert Dumitru\*, Quinn Perian\*, Alexander Nealey\*, Mohammed Mannan\*, Eddie Beck,  
David Gay, Dipen Mehta\*, Anish Pandya\*, Ejay Cho\*, 2018  
arXiv:1808.0648  
*This paper was the result of a research group from Camp Euclid 2016. \* indicates high school co-authors.*

7. *Trisections of 4-manifolds with Boundary*  
with David T. Gay and Juanita Pinzón Caicedo,  
Proceedings of the National Academy of Sciences, 115 (43) 10861-10868, 2018;  
DOI: 10.1073/pnas.1717170115
8. *Trisecting Smooth 4-dimensional Cobordisms*  
arXiv:1703.05846, 2017.
9. *Diagrams for Relative Trisections*  
with David T. Gay and Juanita Pinzón Caicedo  
Pacific Journal of Mathematics 294-2 (2018), 275–305. DOI 10.2140/pjm.2018.294.275
10. *Relative Trisections of Smooth 4-manifolds with Boundary*  
Ph.D. Thesis, The University of Georgia, 2016

AWARDS AND  
FELLOWSHIP

- AIM SQUARE**, with P. Aceto, M. Miller, J. Park, A. Stipsicz  
*Fibered ribbon knots and Casson-Gordan exotic 4-spheres* 2020-2021
- New Faculty Teaching Commendation**  
*University of Arkansas* 2018-2019
- The University of Georgia Graduate Student Excellence in Research Award**  
*Mathematical and Physical Sciences* 2017
- The University of California, Davis Chancellor's Postdoctoral Fellowship**  
*Mentor: Professor Abigail Thompson* 2016 - 2018
- Southern Regional Education Board Dissertation Completion Award**  
*SREB Doctoral Scholars Program* 2015-2016
- VIGRE Research Fellowship**  
February 2014 - July 2014, August 2011 - June 2012
- California State University Northridge PUMP Undergraduate Award**  
September 2007 - December 2008

INVITED TALKS

- Relative Group Trisections* May 2021  
Low-dimensional Topology and Symplectic Geometry Weekend
- Making sense of smooth 4-manifolds through lower dimensions* March 2021  
Eastern Illinois University
- Relative group trisections and smooth 4-manifolds with boundary* January 2021  
University of Iowa Topology Seminar
- Relative group trisections and smooth 4-manifolds with boundary* January 2021  
JMM Special Session on 3- and 4-manifolds
- Isotopy Classes of Relatively Trisected 4-manifolds with Boundary* December 2020  
Centro de Investigación en Matemáticas, GTO, México
- Isotopy Classes of Relatively Trisected 4-manifolds with Boundary* November 2020  
Fall Redbud Topology Conference
- Future Directions of Relative Trisections* July 2020  
Geometry/Topology Grad. Student and Postdoc. Seminar
- Lefschetz Fibrations and Trisections* October 2018  
Topology Seminar, Oklahoma State University

<i>Complicated Monodromies and Trisections</i> AMS Spring Eastern Sectional Meeting, Northeastern University	April 2018
<i>Relative Trisections and Bounding Open Book Decompositions</i> Redbud Topology Conference, Oklahoma State University	April 2018
<i>Relative Trisections and Lefschetz Fibrations</i> Topology Seminar, Brigham Young University	November 2017
<i>Interactions Between 3- and 4-manifolds via Trisections</i> Topology Seminar, University of California, Santa Barbara	November 2017
<i>Relative Trisections and Fibered Knots</i> Topology Seminar, The University of Georgia	October 2017
<i>Relative Trisection Diagrams</i> Algebra/Topology Seminar, The University of Alabama	February 2017
<i>Trisections of Smooth 4-manifolds</i> Department Colloquium, California State University Northridge	December 2016
<i>Trisections of Smooth 4-manifolds with Boundary</i> ECSTATIC 2, Imperial College London	June 2016
<i>Gluing and Stabilizing Relative Trisections</i> AMS Spring Southeastern Sectional Meeting, The University of Georgia	March 2016
<i>Relative Trisection Diagrams of Smooth 4-manifolds with Boundary</i> Topology Seminar, Georgia Institute of Technology	November 2015
<i>Topology in Dimensions Zero Through Four</i> General Audience Colloquium, Wofford College	November 2015
<i>Trisecting 4-manifolds With Boundary</i> Topology Seminar, University of Texas Austin	November 2014

JOURNAL REFERENCE      Geometry & Topology • Algebraic & Geometric Topology

TEACHING EXPERIENCE	<b>Rice University</b>	
	• <i>Calculus 1</i>	Fall 2021
	<b>University of Arkansas</b>	
	• <i>Calculus 1</i> (Remote instruction via Zoom)	Fall 2020, Spring 2021
	• <i>Applied Linear Algebra</i> (Remote instruction via Zoom)	Summer 2020
	• <i>Calculus 2</i> (Partial Remote instruction)	Spring 2020
	• <i>Calculus 1</i>	Spring 2019, Fall 2019
	• <i>Applied Linear Algebra</i>	Summer 2019
	• <i>Survey of Calculus</i>	Summer 2018, Fall 2018

## The University of Georgia

Instructor of Record

- *Calculus 1* Spring 2011, Fall 2014, Spring 2015, Fall 2015
- *Precalculus* Fall 2010, Fall 2013

Recitation Instructor

- *Topology Qualifying Exam Problem Session* Summer 2013, 2014
- *Calculus* Fall 2009, Spring 2010

Writing Intensive Program TA

- *For courses designed for future math educators* Fall 2012, Spring 2013

## Outreach and Volunteering

*University of Georgia Mentor Program* Fall 2020 - current  
Alumni mentor for current students at the University of Georgia

*Camp Euclid: Research Summer camp for High Schoolers* 2016, 2017, 2019, 2020, 2021  
Lead mentor, Postdoctoral Mentor

*American Mathematics Competition 8, 10, & 12.* 2019-2020  
University of Arkansas Team Leader

*Math Olympiad for Elementary and Middle School* 2019-2020  
Person in Charge of Olympiad, Lead Mentor for Math Club

*Women's Empowerment* January 2018  
Mathematics Instructor, Resident Manager Program Pre-Training

*COSMOS UC Davis* July 2017  
Mathematics Cluster Teacher Fellow (Knots, Links and the Topology of Spaces)

*Women's Empowerment* July 2017  
Graphic design for "The Get a Job Kit", [www.thegetajobkit.com](http://www.thegetajobkit.com).

*Summer PUMP Program, California State University, Los Angeles* July 2016  
Inspirational Speaker

*Underrepresented Students in Topology and Algebra Research Symposium* April 2016  
Mentor Panelist

*The University of Georgia High School Math Camp* Summer 2014  
Program Director

*Volunteer for Math Counts program at UGA* Fall 2013