

# Nickolas A. Castro

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## CONTACT INFORMATION

University of Arkansas  
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## EMPLOYMENT

**Visiting Assistant Professor** July 2018 - Present  
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. *The Relative  $\mathcal{L}$ -invariant of a Compact 4-manifold with Boundary*  
with Gabriel Islambouli, Maggie Miller, and Maggy Tomova  
arXiv:1908.05371, 2019. Submitted.
2. *Trisections of 4-manifolds via Lefschetz fibrations*  
with Burak Ozbagci  
Mathematical Research Letters 26(2): 383-420, 2019.
3. *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.*
4. *Trisections of 4-manifolds with Boundary*  
with David T. Gay and Juanita Pinzón Caicedo,  
Proceedings of the National Academy of Sciences Oct 2018, 115 (43) 10861-10868;  
DOI: 10.1073/pnas.1717170115
5. *Trisecting Smooth 4-dimensional Cobordisms*  
arXiv:1703.05846, 2017.
6. *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
7. *Relative Trisections of Smooth 4-manifolds with Boundary*  
Ph.D. Thesis, The University of Georgia, 2016

AWARDS AND  
FELLOWSHIP

<b>New Faculty Teaching Commendation</b> <i>The University of Arkansas</i>	2018-2019
<b>The University of Georgia Graduate Student Excellence in Research Award</b> <i>Mathematical and Physical Sciences</i>	2017
<b>The University of California, Davis Chancellor's Postdoctoral Fellowship</b> <i>Mentor: Professor Abigail Thompson</i>	2016 - 2018
<b>Southern Regional Education Board Dissertation Completion Award</b> <i>SREB Doctoral Scholars Program</i>	2015-2016
<b>VIGRE Research Fellowship</b> <i>NSF Grant DMS-0738586</i>	February 2014 - July 2014, August 2011 - June 2012
<b>California State University Northridge PUMP Undergraduate Award</b> <i>NSF Grant DMS- 0502258</i>	September 2007 - December 2008

INVITED TALKS

<i>Lefschetz Fibrations and Trisections</i> Topology Seminar, Oklahoma State University	October 2018
<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

EXPOSITORY  
SEMINAR TALKS

**University of California, Davis**

*Graduate Student Topology/Geometry Seminar*

- The Topology of a Lefschetz Fibration

**The University of Georgia**

*UGA Mock AMS Workshop*

- An Introduction to Trisecting 4-manifolds
- An Introduction to the Rubenstein-Scharlemann Graphic
- The Dotted Circle Method of Drawing 4-dimensional 1-handles
- A Brief Introduction to Morse Theory

*VIGRE Graduate Student Seminar*

- An Introduction to Khovanov Homology
- The h-Cobordism Theorem
- Waldhausen's Theorem via the Rubenstein-Scharlemann Graphic

**California State University Northridge**

*PUMP Undergraduate Research Seminar, California State University Northridge*

- On the Rigidity of Cohomogeneity One Submanifolds

JOURNAL  
REFEREE

Geometry & Topology

Algebraic & Geometric Topology

TEACHING  
EXPERIENCE

**University of Arkansas**

- *Calculus 1* Spring 2019, Fall 2019
- *Applied Linear Algebra* Summer 2019
- *Survey of Calculus* Summer 2018, Fall 2018

**The University of Georgia**

Instructor of Record

- *Calculus* 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

Fall 2012, Spring 2013

- *For courses designed for future math educators*

**California State University Northridge**

Instructor of Record

- *Math 131: Mathematical Ideas* Spring 2009

University Tutor

August 2007 - December 2008

- *Precalculus - Calculus I, II, and III - Linear Algebra*
- *Abstract Algebra - Undergraduate Real Analysis*

**Fairburn Elementary School**

Teaching Assistant for Grades 2 and 5

Fall 2006, Spring 2007

**Outreach and  
Volunteering**

*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