Juanita Pinzón Caicedo

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Positions

Assistant Professor, University of Notre Dame. 2020-today.
Postdoctoral Fellow, Max Planck Institute for Mathematics. 2019-2020.
Postdoctoral Research Scholar, NC State University. 2017-2019.
Postdoctoral Teaching and Research Assistant, University of Georgia, Athens. 2014-2017.

Research Interests

- Knot Theory
- Concordance
- Satellite Operations
- Gauge Theory
- Homology Cobordism
- Trisections
- Open Book
- Instantons
- Chern-Simons

Education

2008-2014 **Ph.D.** **Mathematics**, *Indiana University, Bloomington, IN*
Department of Mathematics
Thesis: *Independence of satellite operations of torus knots in the smooth concordance group*
Adviser: Paul Kirk

2007-2008 **Graduate Studies, Mathematics**, *Universidad de Los Andes, Bogotá, Colombia*
Department of Mathematics

2003-2007 **B.S.** **Mathematics**, *Universidad de Los Andes, Bogotá, Colombia*
Department of Mathematics
Thesis: *Morse Homology*
Adviser: Bernardo Uribe

1989-2002 **K-12** **Colegio**, *Gimnasio Los Portales, Bogotá, Colombia*

Publications

Published or Accepted

[1] Nickolas A. Castro, David T. Gay, and Juanita Pinzón-Caicedo. "Trisections of 4–manifolds with Boundary". In: *Proceedings of the National Academy of Sciences* 115.43 (2018), pp. 10861–10868. URL: http://www.pnas.org/content/115/43/10861.

[2] Nickolas A Castro, David T Gay, and Juanita Pinzon-Caicedo. "Diagrams for Relative Trisections". In: *Pacific Journal of Mathematics* 294.2 (2018), pp. 275–305. URL: https://doi.org/10.2140/pjm.2018.294.275.

[3] Peter Feller, Allison N. Miller, and Juanita Pinzon-Caicedo. "A note on the topological slice genus of satellite knots". In: *Algebraic & Geometric Topology (To appear)* (2020). eprint: arXiv:1908.03760.

[4] Yoshihiro Fukumoto, Paul Kirk, and Juanita Pinzón-Caicedo. "Traceless $SU(2)$ representations of 2-stranded tangles". In: *Math. Proc. Cambridge Philos. Soc.* 162.1 (2017), pp. 101–129. ISSN: 0305-0041. URL: https://doi.org/10.1017/S0305004116000360.

[5] Matthew Hedden and Juanita Pinzón-Caicedo. "Satellites of Infinite Rank in the Smooth Concordance Group". In: *Inventiones mathematicae* (2021). URL: https://doi.org/10.1007/s00222-020-01026-w.

[6] Tye Lidman, Juanita Pinzón-Caicedo, and Christopher Scaduto. "Framed instanton homology of surgeries on L-space knots". In: *Indiana University Mathematics Journal (To appear)* (2020). eprint: arXiv:2003.03329.

[7] Juanita Pinzón-Caicedo. "Independence of Iterated Whitehead Doubles". In: *Proc. Amer. Math. Soc.* (2018). URL: https://doi.org/10.1090/proc/14261.

[8] Juanita Pinzón-Caicedo. "Independence of satellites of torus knots in the smooth concordance group". In: *Geom. Topol.* 21.6 (2017), pp. 3191–3211. ISSN: 1465-3060. URL: https://doi.org/10.2140/gt.2017.21.3191.

Submitted

[9] Tye Lidman, Juanita Pinzón-Caicedo, and Raphael Zentner. *Toroidal homology three-spheres have non-trivial $SU(2)$ representations*. eprint: arXiv:2101.02621.

Grants, Honors & Awards

Simons - Connections between Knot concordance and Four–manifolds via Floer Theories,	2020
AIM SQuaRE - Trisections, Knotted Surfaces, and Symplectic 4-Manifolds,	2017
NSF FRG Trisections - New Directions in Low-dimensional Topology,	2016
OVPR Foreign Travel Assistance Program, *University of Georgia*	2015
Provost's Travel Award for Women in Science, *Indiana University*	2013
David A. Rothrock Associate Instructor Award, *Indiana University*	2012
Women in Science Program Travel Award, *Indiana University*	2012

Women in Science Program Travel Award, *Indiana University*	2011
Office of Women's Affairs Fellowship, *Indiana University*	2008
Teaching Assistanship, *Universidad de Los Andes*	2007
Academic Excellence, *Gimnasio Los Portales*	2002

Teaching Experience

At NC State University I was a participant in the highly competitive Teaching and Communication Certificate, a program designed to make participants more effective instructors. The standard requirements for the Teaching and Communication Certificate are 100 hours of approved activities plus a professional development portfolio. I completed the program in December 2018.

I am a 2020 fellow of Project NExT, a professional development program aimed at improving the teaching and learning of mathematics, engaging in research and scholarship, finding exciting and interesting service opportunities, and participating in professional activities.

Instructor

2021 Fall	Topology, *University of Notre Dame*
2021 Spring	Finite Mathematics, *University of Notre Dame*
2021 Winter	Directed Readings (Twisted Alexander polynomials), *University of Notre Dame*
2020 Fall	Topology, *University of Notre Dame*
2019 Spring	Foundations of Geometry, *NC State University*
2018 Fall	Calculus II, *NC State University*
2018 Spring	Vector Bundles and Characteristic Classes, *NC State University*
2017 Fall	Finite Mathematics, *NC State University*
2017 Spring	Integral Calculus, *University of Georgia*
2016 Fall	Point Set Topology, *University of Georgia*
2016 Spring	Differential Calculus, *University of Georgia*
2015 Fall	Foundations of Geometry, *University of Georgia*
2015 Spring	Integral Calculus, *University of Georgia*
2014 Fall	Differential Calculus, *University of Georgia*
2014 Spring	Finite Mathematics, *Indiana University*
2012 Fall	Finite Mathematics I, *Indiana University*
2012 Spring	Basic Algebra for Finite Math, *Indiana University*
2010 Spring	Pre-Calculus Mathematics, *Indiana University*
2009 Fall	Pre-Calculus Mathematics, *Indiana University*
2007 Spring	Differential Calculus, *Universidad de Los Andes*

Recitation Leader/ Assistant Instructor

2013 Fall	Modern Algebra for Secondary School Teachers, *Indiana University*
2011 Fall	Calculus II, *Indiana University*
2010 Fall	Topics in Euclidean Geometry, *Indiana University*

2009 Spring	Finite Mathematics, *Indiana University*
2008 Spring	Vector Calculus, *Universidad de Los Andes*
2007 Fall	Calculus on Manifolds, *Universidad de Los Andes*
2007 Fall	Differential Calculus, *Universidad de Los Andes*
2006 Fall	Integral Calculus, *Universidad de Los Andes*

Minicourses

2021*	Breve introducción a la teoría de los nudos, *Emalca, Arequipa, Perú (virtual)*
2019	Knot Theory, *Undergraduate geometry & topology summer workshop, University of Notre Dame*
2018	Nudos y Superficies, *Escuela de Nudos, CIMAT, Guanajuato*
2013	3-Esferas de Homología, *Taller de Geometría y Topología, UNAM, Oaxaca*

Academic Service and Contributions

• Referee 2014-present
Mathematische Annalen, Algebraic & Geometric Topology, Quantum Topology, Boletín de la Sociedad Matemática Mexicana,

• ASCEND program 2021
University of Notre Dame, Development of materials (video)

• Research Community in 4-dimensional Topology 2021
AIM, Co-Organizer

• AMS Special Session on Low Dimensional Topology 2021
JMM, Co-Organizer

• Reading seminar in contact and symplectic topology 2020
Online, Co-Organizer

• Virtual Low-Dimensional Topology 2020
Online, Co-Maintainer

• NSF Panel 2020
NSF, Reviewer

• AMS Special Session on Latinx in Math 2019
JMM, Organizer (contact person)

• Applied Dance+Inspired Math 2018
NC State University, Collaborated in the production and participated on the show.

• Community Engaged Project 2018
NC Museum of History, Designer of guide "Math in the Museum"

• AMS Special Session on Trisections 2018
Northeastern University, Organizer (contact person)

• GLBT Advocate Program 2017-today
NCSU, Advocate

• Working Seminar - Trisections of 4–manifolds 2017
NCSU, Organizer

- Mathematische Annalen 2017
  Springer, Referee
- Georgia Topology International Conference 2017
  University of Georgia, Co-organizer
- UGA MathCamp 2016
  University of Georgia, Leader
- Georgia Topology Conference 2016
  University of Georgia, Co-organizer
- Peach State Louis Stokes Alliance for Minority Participation (Peach State LSAMP) 2015
  University of Georgia, Faculty Mentor
- Graduate Student Topology Seminar 2014-2016
  University of Georgia, Organizer
- Program for Women in Science, Technology, and Math at IU 2012-2013
  Indiana University, Math Consultant
- Women in STM mentoring program 2013 Spring
  Indiana University, Mentor
- Lunch for Women in Math 2010-2013
  Indiana University, Organizer
- 10th Annual Graduate Student Topology and Geometry Conference 2012
  Indiana University, Organizer
- Universidad de Los Andes Student Body 2007-2008
  Universidad de Los Andes, Mathematics Graduate Representative

Presentations - Research

2022* **Frontiers in Geometry and Topology**, *ICTP, Trieste, Italy*
TBD

2022* **Surfaces in 4-manifolds**, *Le Croisic, France*
TBD

2022* **Topology, Lie Algebras and Lie Groups**, *Universidade Federal Fluminense*
TBD

2022* **JMM-Women and Gender Minorities in Symplectic and Contact Geometry**, *Seattle*
TBD

2021* **Blackwell-Tapia**, *MSRI*
Instantons and Knot Concordance

2021* **AMS Sectional**, *Creighton University (Virtual)*
Satellite Operations that are not homomorphisms

2021* **Women Lecture Series**, *Kansas State University*
TBD

2021* **Coloquio**, *Universidad de Los Andes*
TBD

2021 **Mathematical Congress of the Americas**, *Buenos Aires (Virtual)*
Instantons and Knot Concordance

2021 **Knots, Surfaces and 3-manifolds**, *BIRS-CMO (Virtual)*
Toroidal integer homology spheres have irreducible SU(2)-representations.

2021 **Cibercoloquio Latinoamericano de Matemáticas**, *Virtual*
Variedades diferenciales de dimensión cuatro y concordancia de nudos

2021 **Summer Trisectors Workshop**, *Virtual*
Introduction to relative trisections I and II

2021 **Topology Seminar**, *Dartmouth College*
Toroidal homology spheres and $SU(2)$-representations

2021 **AMS Sectional**, *Brown (Virtual)*
Toroidal homology spheres and $SU(2)$-representations

2021 **Topology Seminar**, *UBC*
Toroidal homology spheres and $SU(2)$-representations

2021 **Topology Seminar**, *UCSD*
Toroidal homology spheres and $SU(2)$-representations

2021 **Gauge Theory Virtual Seminar**, *Virtual*
Toroidal homology spheres and $SU(2)$-representations

2021 **JMM**, *Washington DC (Virtual)*
The topological 4-genus of satellite knots

2020 **Seminario de Topología en Dimensiones Bajas Fico González Acuña**, *CIMAT*
The topological 4-genus of satellite knots

2020 **Topology Seminar**, *UC Davis*
The topological 4-genus of satellite knots

2020 **Interactions of Gauge Theory and Contact and Symplectic Topology**, *BIRS*
Framed Instanton homology of surgeries on torus knots

2020 **Virtual Trisectors Meeting**, *Online*
The contact invariant of covers of S^3

2020 **Topology and Geometry Seminar**, *Université de Toulouse*
The topological 4-genus of satellite knots

2019 **Topology and Geometry Seminar**, *Université de Nantes*
Satellites of Infinite Rank in Concordance

2019 **Workshop/Arbeitstagung on Foliations**, *Universität Regensburg*
Gabai's work on Sutured Manifold Decompositions

2019 **Topology and Geometry Seminar**, *University of Glasgow*
The topological 4-genus of satellite knots

2019 **Workshop on 4-manifolds**, *MPIM*
Instanton and Heegaard Floer homologies of surgeries on torus knots

2019 **London Mathematical Society Durham Symposium**, *Durham University*
Instanton and Heegaard Floer homologies of surgeries on torus knots

2019 **Topology Seminar**, *Princeton University*
Satellites of Infinite Rank in Concordance

2019 **Topology Seminar**, *University of Oregon*
Satellites of Infinite Rank in Concordance

2019 **JMM**, *Baltimore*
Satellites of Infinite Rank in Concordance

2018 **Topology Conference**, *University of Virginia*
Satellites of Infinite Rank in Concordance

2018 **Tech Topology Conference**, *Georgia Tech*
Satellites of Infinite Rank in Concordance

2018 **AMS Sectional**, *University of Arkansas, Fayetteville*
Relative trisections and HF contact invariants

2018 **Topology Seminar**, *Indiana University Bloomington*
Satellites of Infinite Rank in Concordance

2018 **Topology Seminar**, *University of Nebraska-Lincoln*
Operations of Infinite Rank in Concordance

2018 **Topology Seminar**, *Michigan State University*
Gauge Theory and Knot Concordance

2018 **AMS Sectional**, *Ohio State University*
Cable-like satellites are not homomorphisms

2018 **Latinx in Math - Poster Session**, *IPAM UCLA*
Gauge Theory and Knot Concordance

2018 **Topology Seminar**, *Duke University*
Gauge Theory and Knot Concordance

2017 **XXI Congreso Colombiano de Matematicas**, *Universidad Nacional de Colombia*
La dimensión 4 y la concordancia de nudos

2016 **AMS Sectional**, *North Carolina State University*
Examples of relative trisections

2016 **Topology Seminar**, *Georgia Tech*
Examples of relative trisections

2016 **AMS Sectional**, *St. Thomas University*
Examples of relative trisections

2016 **Conference on 4-manifolds and knot concordance**, *MPIM*
Iterated Whitehead Doubles are Independent

2016 **Seminar on knot concordance and 4-manifolds**, *Hausdorff Research Institute for Mathematics*
Examples of relative trisections

2016 **Knots in the Triangle**, *North Carolina State University*
Independence of Whitehead Doubles of Torus Knots in the Smooth Concordance Group

2016 **Topology Seminar**, *University of Buffalo*
An Overview of Relative Trisections.

2016 **Advances in Quantum and Low-Dimensional Topology**, *University of Iowa*
An Overview of Relative Trisections.

2016 **AMS Sectional**, *University of Georgia*
An Overview of Relative Trisections.

2016 **Synchronizing Smooth and Topological 4-Manifolds**, *Banff International Research Station*
An Overview of Relative Trisections.

2015 **Matemáticas por estudiantes**, *Universidad de Los Andes*
Construcciones de 3-variedades y la esfera de Poincaré.

2015 **Workshop**, *CIRM*
Trisections, braids and two fold covers of S^4.

2015 **Topology Seminar**, *Brandeis University*
Independence of Whitehead Doubles of Torus Knots in the Smooth Concordance Group

2015 **Topology Seminar**, *Georgia Tech*
Independence of Whitehead Doubles of Torus Knots in the Smooth Concordance Group

2014 **Topology Seminar**, *University of Georgia*
Independence of Whitehead Doubles of Torus Knots in the Smooth Concordance Group

2013 **Topology Seminar**, *Michigan State University*
Traceless $SU(2)$-representations of 2-stranded tangles

2013 **Topology Seminar**, *Louisiana State University*
Traceless $SU(2)$-representations of 2-stranded tangles

2013 **Workshop and Conference on the Topology and Invariants of Smooth 4-Manifolds**, *University of Minnesota*
Independence of Whitehead Doubles in the Smooth Concordance Group

2012 **Program for Women and Mathematics**, *Institute for Advanced Studies*
Independence In the Smooth Concordance Group Through SO(3)-Chern-Simons Invariants

2007 **Geometric, Algebraic, and Topological Methods for Quantum Field Theory**, *Villa de Leyva, Colombia*
Morse Homology

Presentations - Other

2021 **Graduate Student Seminar**, *University of Notre Dame*
Instantons and Knot Concordance

2019 **Workshop on Inclusive Teaching Practices**, *UNC*
Inclusion in Mathematics: A personal experience

2018 **Working Seminar**, *NCSU*
Introduction to Trisections

2017 **SUM Series**, *NCSU*
Crunched Charms, a short introduction to knot theory

2017 **Working Seminar**, *NCSU*
Homology with Local Coefficients

2017 **Topology Seminar**, *NCSU*
Iterated Whitehead Doubles are Independent

2017 **Math Club**, *University of Georgia*
Crunched Charms, a short introduction to knot theory

2017 **Topology Seminar**, *UGA*
Concordance of Iterated Whitehead Doubles

2016 **Topology Seminar**, *UGA*
Diagrams of relative trisections

2016 **Topology Seminar**, *UGA*
An Overview of Relative Trisections

2016 **Graduate Student Seminar**, *UGA*
A group structure on knots

2015 **Topology Seminar**, *UGA*
The signature of branched covers of the 4–sphere

2015 **Topology Seminar**, *UGA*
Representation Spaces of Surfaces

2015 **Graduate Student Seminar**, *UGA*
Some constructions of 3-manifolds

2014 **Topology Seminar**, *UGA*
Chern-Simons Invariants

2013 **Topology Seminar**, *Indiana University*
Topological and Geometric Group Theory

2012 **Graduate Student Seminar**, *Indiana University*
Morse Theory

2011 **Graduate Student Seminar**, *Indiana University*
Poincare's Homology Sphere

2011 **Topology Seminar**, *Indiana University*
Rational Blowdown

2011 **Topology Seminar**, *Indiana University*
Symplectic Manifolds and Fillability of Contact Manifolds

2010 **Topology Seminar**, *Indiana University*
The Slice Theorem

2008 **Topology Seminar**, *Indiana University*
Morse Homology