

Pedro Brunialti Lima de Andrade

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Areas of interest

Homotopy Theory, Algebraic Topology and Mathematical Physics

Education

University of Virginia

Ph.D. in Mathematics – Advisor: Prof. Julie Bergner

Charlottesville

2022-Present

Federal University of Minas Gerais - UFMG

M.Sc. in Mathematics – Advisor: Prof. Rodney Josué Biezuner

Title: Comparing Models for $(\infty, 1)$ -categories.

Belo Horizonte

2020-2022

Federal University of Minas Gerais - UFMG

B.Sc. in Physics

Belo Horizonte

2016-2019

Publications

Articles.....

[1] Abdelmalek Abdesselam, Pedro Brunialti, Tristan Doan, and Philip Velie. A bijection for tuples of commuting permutations and a log-concavity conjecture. *Res. Number Theory*, 10(2):Paper No. 45, 10, 2024.

Scholarships

Academic Excellence Program (PROEX)

M.Sc. program scholarship.

2020-2022

Program of Undergraduate Research Scholarships (CNPq)

Undergraduate research scholarship.

2018-2019

Teaching experience

Calculus II

Instructor of record, Mathematics Department, University of Virginia

Fall 2025

Survey of Calculus I

Instructor of record, Mathematics Department, University of Virginia

Fall 2024

Calculus I

Instructor of record, Mathematics Department, University of Virginia

Spring 2024

A Survey of Calculus II

Instructor of record, Mathematics Department, University of Virginia

Fall 2023

Calculus II

Teaching assistant, Mathematics Department, University of Virginia

Spring 2023

Calculus III

Teaching assistant, Mathematics Department, University of Virginia

Fall 2022

Differential Equations A

Teaching assistant, Dep. of Mathematics, ICEX, UFMG

10/2021-01/2022

Analytic Geometry and Linear Algebra

Teaching assistant, Dep. of Mathematics, ICEX, UFMG

05/2021-09/2021

Mentoring

University of Virginia Math Experimental Lab

Co-mentor: Thomas Jaklitsch. Project: Compass and Straightedge Constructions.

Spring 2026

University of Virginia Directed Reading Program

Mentee: Zubin Kaul. Project: Differential geometry of curves and surfaces.

Fall 2024

Mentee: Mary Edith Plunkett. Project: Nonlinear dynamics and chaos.

Spring 2024

Mentee: Brian Meiser. Project: Hamiltonian mechanics and Poisson brackets.

Fall 2023

Contributed talks

GSTGC Conference

Bi-incomplete Tambara Functors are almost never flat (planned)

04/2026

BUGCAT Conference

($\infty, 2$)-symmetric monoidal categories with involutions

11/2025

University of Virginia Graduate Seminar

Chern classes in physics

09/2025

University of Virginia Graduate Seminar

Understanding and classifying TQFTs

08/2024

University of Virginia Graduate Seminar

What are universal properties?

01/2024

University of Virginia Graduate Seminar

A mathematical formulation of quantum mechanics

01/2023

I Mathematics Meeting of Minas Gerais

Equivalence between homotopy theories

09/2021

First Brazilian Meeting on Category Theory

Modern homotopy theory: model categories

01/2021

First Brazilian Meeting on Category Theory

Tutorial: categories and functors

01/2021

GFT group

Interpreting the measurement axiom

06/2021

GFT group

The mathematics of gauge theories

06/2021

The Serre-Swan Theorem and K-theory

Math-Phys-Cat group

01/2021

An invitation to model categories

Math-Phys-Cat Group

10/2020

Conferences, schools, and workshops attended

BUGCAT Conference, Binghamton University	2025
Mathematical Congress of the Americas 2025, Miami, Florida, USA	2025
Mid-Atlantic Collaborative Workshop in Algebraic Topology, Lexington, Virginia, USA	2025
Atlantic TQFT Spring School 2025, University of New Brunswick	2025
AMTRaK Conference, University of Pennsylvania	2025
Mid-Atlantic Topology Conference, University of Virginia	2025
New England Algebraic Topology and Mathematical Physics, Providence College	2024
Encuentro Colombiano de Geometría y Topología, National Univeristy of Colombia	2024
Atlantic TQFT Spring School 2024, Memorial University Newfoundland	2024
Graduate Student Topology and Geometry Conference, Michigan State University	2024
BUGCAT Conference, Binghamton University	2023
Algebraic K-Theory and Redshift, Johannes Gutenberg University Mainz	2023
Topological Moonshine, University of Illinois, Urbana-Champaign	2023
Atlantic TQFT Spring School 2023, Wolfville, Nova Scotia, Canada	2023
Homotopy Theory in Honor of Paul Goerss, Northwestern University	2023
Field of Dreams Conference, Minneapolis, Minessota, USA	2022
I Mathematics Meeting of Minas Gerais, virtual participation due to COVID-19	2021
First Brazilian Meeting on Category Theory, virtual participation due to COVID-19	2021
Toposes online, virtual participation due to COVID-19	2021

Academic service

President of the University of Virginia AMS Graduate Student Chapter *Fall 2024 - Present*

Languages

Portuguese: Native

English: Fluent

Spanish: Advanced

French: Intermediate