

Pablo S. Ocal

Curriculum Vitae

Department of Mathematics
The University of British Columbia
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Employment

- 2026–present **Postdoctoral Research Fellow**, *University of British Columbia*, Canada
Mentors: Kai Behrend, Jim Bryan, Ben Williams
- 2024–2025 **Postdoctoral Scholar**, *Okinawa Institute of Science and Technology*, Japan
Mentor: Liron Speyer
- 2021–2024 **Assistant Adjunct Professor**, *University of California, Los Angeles*, CA, United States of America
Mentor: Paul Balmer

Visiting Positions

- Fall 2025 **Program Participant**, *Categorification and Computation in Algebraic Combinatorics*, Institute for Computational and Experimental Research in Mathematics
Mentor: Peter McNamara
- Summer 2024 **Research Member**, *Quantum Symmetries Reunion*, Simons Laufer Mathematical Sciences Institute
- Fall 2022 **Program Fellow**, *Spectral Methods in Algebra, Geometry, and Topology*, Hausdorff Research Institute for Mathematics
- Spring 2020 **Program Associate**, *Quantum Symmetries*, Mathematical Sciences Research Institute
Mentors: Cris Negron and Chelsea Walton

Education

- 2016–2021 **Ph.D., Mathematics**, *Texas A&M University*, TX
Advisor: Sarah Witherspoon
- 2015–2016 **M.Sc., Mathematics**, *Universite Pierre-et-Marie-Curie (Paris VI)*, France
Advisor: Bruno Kahn
- 2010–2015 **B.Sc., Mathematics**, *Universitat Autònoma de Barcelona*, Spain
Advisor: Jaume Aguade Bover
- 2010–2015 **B.Sc., Physics**, *Universitat Autònoma de Barcelona*, Spain
Advisor: Anna Laromaine

Publications and Preprints

- 10 **Structure and geometry of the tableaux algebra**, with S. Daugherty, N. Gonzalez, B. Muniz, J. Pan, and J. Torres
• [arXiv:2510.27209](https://arxiv.org/abs/2510.27209)
- 9 **Realizing compatible pairs of transfer systems by combinatorial N-infinity-operads**, with D. Chan, M. Cho, D. Mehrle, A. M. Osorno, B. Szczesny, and P. Verdugo
• [arXiv:2510.26047](https://arxiv.org/abs/2510.26047)
- 8 **Locally recoverable algebro-geometric codes from projective bundles**, with K. Aguilar, A. Alvarez, R. Ardila, C. Rodriguez Avila, and A. Varilly-Alvarado, to appear in *Des. Codes Cryptogr.*
• [arXiv:2409.04201](https://arxiv.org/abs/2409.04201)
- 7 **Universal support for triangulated categories**, with P. Balmer, *C. R. Math. Acad. Sci. Paris*, 2024
• [arXiv:2308.10815](https://arxiv.org/abs/2308.10815)

- 6 **Symmetric monoidal equivalences of topological quantum field theories in dimension two and Frobenius algebras**, *Proc. Amer. Math. Soc.*, 2024
 - arXiv:2307.05309
- 5 **A compositional account of motifs, mechanisms, and dynamics in biochemical regulatory networks**, with R. Aduddell, J. Fairbanks, A. Kumar, E. Patterson, and B. T. Shapiro, *Compositionality*, 2024
 - arXiv:2301.01445
- 4 **A primer on twists in the noncommutative realm focusing on algebra, representation theory, and geometry**, with K. Ueyama and P. Veerapen, *Contemp. Math.*, 2024
 - arXiv:2211.15885
- 3 **A dichotomy between twisted tensor products of bialgebras and Frobenius algebras**, with A. Oswald, *J. Algebra*, 2024
 - arXiv:2211.14754
- 2 **Homotopy liftings and Hochschild cohomology of some twisted tensor products**, with T. Oke and S. Witherspoon, *J. Algebra Appl.*, 2022
 - arXiv:2005.06660
- 1 **Gerstenhaber brackets on Hochschild cohomology of general twisted tensor products**, with T. Karadag, D. McPhate, T. Oke, and S. Witherspoon, *J. Pure Appl. Algebra*, 2021
 - arXiv:1909.02181

Scholarships and Awards

- 2025–2027 **KAKENHI Grant-in-Aid for Early-Career Scientists**, Japan Society for the Promotion of Science
 - Grant Number: JP25K17242
- 2024 **Team-Up**, Pacific Institute for the Mathematical Sciences
 - Project: Twisted tensor products of Hopf algebras
- 2024–2026 **AIM SQuaRE**, American Institute of Mathematics
 - Project: Locally recoverable codes from the algebraic geometry of projective spaces
- 2024 **US Junior Oberwolfach Fellowship**, Mathematisches Forschungsinstitut Oberwolfach and National Science Foundation
- 2022–2024 **AMS-Simons Travel Grant**, American Mathematical Society and Simons Foundation
- 2022 **Kovalevskaya Grant**, ICM Local Organizing Committee
International Congress of Mathematicians
- 2022 **AMS-NSF-Simons-ICM Travel Grant**, American Mathematical Society
International Congress of Mathematicians
- 2021 **Travel Grant**, American Mathematical Society
Mathematical Congress of the Americas
- 2021 **Virtual Graduate Student Travel Grant**, American Mathematical Society
Joint Mathematics Meetings
- 2016–2018 **E. R. Keown Fellow in Mathematics**, Texas A&M University
- 2016–2021 **Fulbright Scholarship**, Fulbright Program, Spain
- 2015–2016 **X Becas de Postgrado**, Fundación Mutua Madrileña, Spain
- 2012 **JAE Intro**, Instituto de Ciencias Matematicas, Spain
 - Program: Introduction to Ramsey Theory

Advisees

- 2024–present **Rohan Das**, *PRIMES: Program for Research in Mathematics, Engineering and Science for High School Students*, Massachusetts Institute of Technology
- Summer 2023 **Kyan Agdassi**, Saint Francis High School

Professional Service

Program Organization

Representation theory via spectral methods, *Osaka Central Advanced Mathematical Institute MEXT Joint Usage / Research Center on Mathematics and Theoretical Physics*, Japan

- Fiscal year 2025

Conference Organization

Spectrums in Representation Theory of Algebras and Related Topics, *Osaka Central Advanced Mathematical Institute*, Japan

- 16-19 December 2025

AMS Sectional Meeting, United States

- Spring Eastern 2024: *Commutative and noncommutative algebra, together at last*
- Spring Eastern 2021: *Hopf algebras, tensor categories, and related homological methods*

Graduate Algebra Symposium, Texas-Oklahoma

- Spring 2021: University of Oklahoma
- Fall 2020: University of Texas at Arlington
- Spring 2019: University of North Texas
- Fall 2019: Texas A&M University

Gathering in Graduate Expository Mathematics, Texas A&M University

- Spring 2021, Fall 2020, Spring 2019

Committees

Equity, Diversity and Inclusion, University of California, Los Angeles

- Member: 2021–2024

Math Grad Student Diversity Committee, Texas A&M University

- 2020–2021: Co-Founder

Seminar Organization

Quantum Symmetries Seminar, Texas A&M University

- Spring 2021, Fall 2020, Fall 2019

Student Working Seminar in Algebra and Geometry, Texas A&M University

- Fall 2020, Spring 2020, Fall 2019, Spring 2019, Fall 2018

Directed Reading Programs

University of California, Berkeley

- Spring 2020: Mentor

Texas A&M University

- 2020–2021: Organizer
- Fall 2019: Mentor
- Spring 2019: Mentor

Student Government

AMS Chapter, Texas A&M University

- 2020–2021: Vice-President
- 2018–2019: Vice-President

AWM Chapter Peer Mentoring Program, Texas A&M University

- 2018–2021: Mentor

Outreach and Service

Programs

Onna × OIST Children's School of Science, Okinawa Institute of Science and Technology, Onna Junior High School, Onna Village

- Summer 2025: Activity organizer and instructor

Applied Mathematics Mentorship Program, The UCLA Curtis Center

- Video series on Black and Latino/a mathematicians for K-12 schools.

California State University Math Summer Bridge Program, University of California, Los Angeles, and the California State Universities of Long Beach, Los Angeles, Northridge, and San Bernadino

- 2021–2024: Co-organizer

Matching Mathematicians with Classrooms Nationwide, American Institute of Mathematics

- 2021–2022: MATCH Fellow

Panel Discussions and Committees

Undergraduate Math Council Speaker Series, University of California, Los Angeles

- Winter 2022: Invited speaker

Equity, Diversity and Inclusion Committee, University of California, Los Angeles

- 2021–2024: Faculty member

First Year Graduate Student Seminar, Texas A&M University

- Fall 2020: Outreach Opportunities
- Spring 2019: Choosing an Advisor
- Fall 2017: Adjusting to Graduate School

Math Circles

Bridges to Science (Katy, TX)

- Summer 2020: Speaker

University of California, Berkeley

- Spring 2020: Speaker

San Francisco State University

- Spring 2020: Volunteer

Texas A&M University

- Fall 2020: Speaker
- Fall 2019: Speaker
- Spring 2019: Speaker
- 2016–2021: Volunteer

Science Fairs

Science Festival, Okinawa Institute of Science and Technology

- 2025: Volunteer

Math and Stat Fair, Texas A&M University

- Spring 2017: Volunteer

1a Semana de la Ciencia de Paris, Colegio de España (Paris, France)

- Spring 2016: Volunteer

Dissabtes de les Matemàtiques, Universitat Autònoma de Barcelona

- 2011–2015: Volunteer

Selected Conference Talks

2025

June **Warped tensor products and noncommutative 2d topological quantum field theories**, *Recent Development on Representation Theory, Lie Theory and Related Areas*, Research Institute for Mathematical Sciences, Japan

May **Deformations of Frobenius algebras and noncommutative 2d topological quantum field theories**, *Algebraic Lie Theory and Representation Theory*, Kanazawa, Ishikawa, Japan

Feb **The Ziegler spectrum of a discrete valuation ring**, *Large Modules and Endofiniteness*, University of Stuttgart, Germany

2024

Mar **A twisted approach to the Balmer spectrum of a Hopf algebra**, *Southeastern Lie Theory Workshop*, University of Virginia

Jan **Representations of algebras via universal supports**, *Joint Mathematics Meetings*, San Francisco

2023

- Aug **A twisted approach to the Balmer spectrum of the stable module category of a Hopf algebra**, *Young Topologists Meeting*, Ecole Polytechnique Federale de Lausanne, Switzerland
- May **Rewriting Zhang twists as twisted tensor products**, *AMS Spring Western Sectional Meeting*, California State University, Fresno
- 2022**
- Jun **Towards a relative support theory**, *Recent Advances and New Directions in the Interplay of Noncommutative Algebra and Geometry*, University of Washington
- Jun **The relative Künneth theorem or the search for a relative support**, *Homological Commutative Algebra and Related Topics*, Georgia Southern University
- †Jan **The relative Künneth theorem in relative Hochschild cohomology**, *Joint Mathematics Meetings*, Seattle, WA
- 2021**
- †Oct **The Relative Künneth Theorem**, *AMS Fall Western Sectional Meeting*, University of New Mexico
- †Jan **The Gerstenhaber bracket in relative Hochschild cohomology**, *Joint Mathematics Meetings*, Washington, District of Columbia
- 2020**
- Aug **Homotopy liftings and Hochschild cohomology of some twisted tensor products**, *Encuentro Virtual de Algebra Homologica*, Universidad de Buenos Aires, Universidad Nacional de Mar del Plata, Universidad Nacional del Sur, Argentina
- Mar **The Gerstenhaber bracket on relative Hochschild cohomology**, *Southwest Local Algebra Meeting*, Tulane University
- Feb **On the Hochschild cohomology ring of some twisted tensor products of algebras**, *Seattle Noncommutative Algebra Day*, University of Washington
- 2019**
- Jul **Hochschild cohomology of twisted tensor product algebras**, *Ragnar's Ramifications in Algebra and Geometry Emerging Workshop*, Fields Institute for Research in Mathematical Sciences, Canada
- Jul **Hochschild cohomology of twisted tensor product algebras**, *Research School on Quantum Symmetries*, Universidad de los Andes, Colombia

Selected Seminar Talks

2025

- October **The tableaux algebra, with applications to geometry and crystals**, *Algebra and Combinatorics Seminar*, Texas A&M University
- May **Deformations of tensor products of Frobenius algebras**, *Mathematics with Computer Science Seminar*, Guangdong Technion-Israel Institute of Technology, China
- April **Warped tensor products and noncommutative 2d topological quantum field theories**, *Representation Theory and Tensor Categories Seminar*, University of California, Berkeley

2024

- Feb **Quantum symmetries via twisted tensor products**, *Representation Theory Seminar*, Okinawa Institute of Science and Technology, Japan

2023

- Nov **Quantum symmetries via twisted tensor products and their Balmer spectrum**, *Algebra Seminar*, Indiana University Bloomington
- Oct **Quantum symmetries via twisted tensor products and their Balmer spectrum**, *Algebra Seminar*, University of Southern California
- Feb **A twisted approach to the Balmer spectrum of the stable module category of a Hopf algebra**, *Algebra Seminar*, University of California, San Diego

2022

- Nov **Lattices, the Balmer spectrum, and representations of algebras**, *Algebra Seminar*, Uppsala University, Sweden
- Oct **Principles of support varieties for relative Hochschild cohomology**, *Algebra and Representation Theory Seminar*, The University of Oklahoma
- Aug **Lattices, the Balmer spectrum, and representations of algebras**, *3 weeks of Representation Theory in Canterbury*, University of Kent, United Kingdom
- Jul **Lattices, the Balmer spectrum, and representations of algebras**, *Seminario de Algebra Homologica y Hierbas Afines*, Universidad de Buenos Aires, Argentina
- Mar **Stable categories in modular representation theory**, *Algebra Seminar*, University of California, Los Angeles
- Mar **Understanding twisted tensor products through deformations**, *Algebra Seminar*, University of California, Irvine
- 2021**
- Jul **The relative Künneth theorem**, *Building Relationships for an Inclusive and Diverse Group of Emerging Students*, University of Utah
- May **Hochschild cohomology of general twisted tensor products**, *Seminario Moduli, Algebra, Anelli*, University of Padua, University of Verona
- Mar **Hochschild cohomology of general twisted tensor products**, *Topology Seminar*, Bilkent University
- 2020**
- Nov **Hochschild cohomology of general twisted tensor products**, *Algebra and Algebraic Geometry Seminar*, University of Washington
- Oct **Hochschild cohomology of general twisted tensor products**, *Representation Theory and Related Topics Seminar*, Northeastern University
- Apr **Structures in Hochschild cohomology**, *MSRI Online Seminar*, Mathematical Sciences Research Institute

Teaching

The University of British Columbia

Instructor

- Spring 2026: Math 152 (Linear Systems)

University of California, Los Angeles

Instructor

- Spring 2024: Math 31B (Integration and Infinite Series)
- Winter 2024: Math 31B (Integration and Infinite Series)
- Fall 2023: Math 33A (Linear Algebra and Applications)
- Spring 2023: Math 115A (Linear Algebra)
- Winter 2023: Math 31B (Integration and Infinite Series)
- Summer 2022: Math 31B (Integration and Infinite Series)
- Summer 2022: Math 33A (Linear Algebra and Applications)
- Spring 2022: Math 115A (Linear Algebra)
- Winter 2022: Math 33A (Linear Algebra and Applications)
- Fall 2021: Math 110AH (Algebra (Honors))
- Fall 2021: Math 31B (Integration and Infinite Series)

Texas A&M University

Instructor

- Summer 2021: Summer Educational Enrichment in Math
- Summer 2020: Math 663 (Algebra Qualifying Exam Preparatory Course)
- Summer 2020: Summer Educational Enrichment in Math
- Fall 2019: Math 141 (Finite Mathematics)
- Summer 2019: Summer Educational Enrichment in Math

† Canceled or hosted online due to COVID-19.

Graduate Teaching Assistant

- Fall 2020: Math 152 (Engineering Mathematics II)
- Spring 2019: Math 654 (Algebra II)
- Fall 2018: Math 653 (Algebra I)

Universitat Autònoma de Barcelona

Undergraduate Teaching Assistant

- Fall 2014: Foundations of Mathematics