

Pablo S. Ocal

Curriculum Vitae

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Education

- 2016–present **Ph.D. Student, Mathematics**, Texas A&M University, TX.
Advisor: Sarah Witherspoon
- 2015–2016 **M.Sc., Mathematics**, Université 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

- 2 **Homotopy liftings and Hochschild cohomology of some twisted tensor products**, with T. Oke and S. Witherspoon.
• arXiv:2005.06660 (submitted).
- 1 **Gerstenhaber brackets on Hochschild cohomology of general twisted tensor products**, with T. Karadag, D. McPhate, T. Oke, and S. Witherspoon, to appear in *J. Pure Appl. Algebra*.
• arXiv:1909.02181

Visiting Positions

- Spring 2020 **Program Associate**, Mathematical Sciences Research Institute.
• Program: Quantum Symmetries

Conference Talks

2021

- 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 Álgebra Homológica, Universidad de Buenos Aires, Universidad Nacional de Mar del Plata, Universidad Nacional del Sur, Argentina.
- [†]May **On the Gerstenhaber bracket in relative Hochschild cohomology of associative algebras**, A Zoom Special Session on DG Methods in Commutative Algebra and Representation Theory, University of Utah.
- [†]May **On the Gerstenhaber bracket in relative Hochschild cohomology of associative algebras**, AMS Spring Western Sectional Meeting, California State University, Fresno.

[†]Canceled or hosted online due to COVID-19.

- †Apr **Hochschild cohomology of twisted tensor product algebras**, Graduate Student Topology and Geometry Conference, Indiana University Bloomington.
- †Apr **Hochschild cohomology of twisted tensor products**, Underrepresented Students in Topology and Algebra Research Symposium, University of Iowa.
- 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.
- Jun **Hochschild cohomology of twisted tensor product algebras (and brackets for certain quantum complete intersections)**, Graduate Student Conference in Algebra, Geometry, and Topology, Temple University.
- Apr **Hochschild cohomology of twisted tensor product algebras**, Texas-Oklahoma Representations and Automorphic Forms, University of North Texas.
- Mar **Hochschild cohomology of twisted tensor product algebras**, Graduate Student Conference in Geometry and Topology, University of Illinois at Urbana-Champaign.
- Mar **Twisted tensor product algebras and compatibility of the bar resolution**, Graduate Algebra Symposium, University of Oklahoma.
- Feb **An algebraist's view of the multinomial coefficients**, Gathering in Graduate Expository Mathematics, Texas A&M University.

2018

- Oct **Relative Hochschild cohomology and its Gerstenhaber product**, Graduate Algebra Symposium, University of Texas at Arlington.
- Apr **Using relative homological algebra in Hochschild cohomology**, Graduate Algebra Symposium, University of North Texas.
- Mar **Using relative homological algebra in Hochschild cohomology**, Gathering in Graduate Expository Mathematics, Texas A&M University.

Seminar Talks

2020

- Nov **TBD**, Algebra and Combinatorics Seminar, Texas A&M University.
- Nov **Hochschild cohomology of general twisted tensor products**, Algebra and Algebraic Geometry Seminar, University of Washington.
- Nov **Hochschild cohomology of general twisted tensor products**, Algebra Seminar, University of Texas at Arlington.
- Nov **Hochschild cohomology of general twisted tensor products**, Algebra and Geometry Seminar, Iowa State University.

†Canceled or hosted online due to COVID-19.

- Nov **Hochschild cohomology of general twisted tensor products**, Algebra Seminar, Indiana University Bloomington.
- Oct **Hochschild cohomology of general twisted tensor products**, Representation Theory and Related Topics Seminar, Northeastern University.
- Oct **Hochschild cohomology of general twisted tensor products**, Lie Theory Seminar, University of California, Riverside.
- Oct **All finite dimensional representations of \mathfrak{sl}_2** , Graduate Student Seminar, Texas A&M University.
- Oct **Hochschild cohomology of general twisted tensor products**, Seminario de Algebra Homologica y Hierbas Afines, Universidad de Buenos Aires, Argentina.
- Oct **Hochschild cohomology of general twisted tensor products**, Algebra Seminar, University of Oregon.
- Oct **Summary on Lie algebras and their representations**, Learning Seminar on Topological Quantum Field Theories and Invariants of Low-dimensional Manifolds, Rice University.
- Sep **Hochschild cohomology of general twisted tensor products**, Algebra and Number Theory Seminar, Louisiana State University.
- Sep **Hochschild cohomology of general twisted tensor products**, Algebra and Number Theory Seminar, Texas Tech University.
- Sep **Interplays of Hochschild cohomology in quantum symmetries**, Quantum Symmetries Student Seminar, The Ohio State University.
- Aug **The vector space structure of the quantized enveloping algebra**, Quantum Symmetries Seminar, Texas A&M University.
- Aug **Representations of the special linear Lie algebra of order two**, Quantum Symmetries Seminar, Texas A&M University.
- Apr **Structures in Hochschild cohomology**, MSRI Online Seminar, Mathematical Sciences Research Institute.
- [†]Apr **Twisted tensor products and brackets in Hochschild cohomology**, Graduate Student Seminar, Mathematical Sciences Research Institute.
- [†]Apr **Inner workings of the Hochschild cohomology of some twisted tensor products**, Algebra and Geometry Seminar, Iowa State University.

2019

- Oct **Hermitian forms, the spectral theorems, and alternating forms**, Student Working Seminar in Algebra and Geometry, Texas A&M University.
- Sep **An overview of duality**, Graduate Student Seminar, Texas A&M University.
- Sep **Functors and multi-functors between semisimple categories**, Quantum Symmetries Seminar, Texas A&M University.
- Sep **Matrices, rank, linear maps, and determinants**, Student Working Seminar in Algebra and Geometry, Texas A&M University.
- Feb **Open and closed subschemes, open and closed immersions**, Student Working Seminar in Algebra and Geometry, Texas A&M University.
- Feb **An introduction to relative homological algebra through group algebras**, Graduate Student Seminar, Texas A&M University.

[†]Canceled or hosted online due to COVID-19.

2018

Sep **An approach to determinants**, Graduate Student Seminar, Texas A&M University.

2017

Sep **Hochschild cohomology**, Student Working Seminar in Algebra and Geometry, Texas A&M University.

2016

Sep **Categories, functors, and natural transformations**, Student Working Seminar in Algebra and Geometry, Texas A&M University.

Jul **A reading on “Algebraic coherent sheaves” by J.-P. Serre**, M.Sc. defense, Université Pierre-et-Marie-Curie, France.

2015

Jul **Triality: a particularity of $\text{Spin}(8)$** , B.Sc. defense, Universitat Autònoma de Barcelona, Spain.

Scholarships and Awards

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 **JAÉ Intro**, Instituto de Ciencias Matemáticas, Spain.

- Program: Introduction to Ramsey Theory

2010 **VII Concurs EIDEA**, Escola Hamelin-Internacional Laie, Spain.

2010 **Matricula de Honor en Bachillerato**, Universitat Autònoma de Barcelona, Spain.

2010 **Joves i Ciència**, Imperial College London, United Kingdom.

- Program: London International Youth Science Forum (LIYSF)

2010 **Premio Excelencia UIC**, Universitat Internacional de Catalunya, Spain.

2009 **Joves i Ciència**, Institut de Ciències Fotoniques, Spain.

- Program: Classic and Quantum Cryptography

2008 **Joves i Ciència**, Planes de Son, Spain.

- Program: Mathematics in Unlikely Places

Professional Service

Conference Organization

AMS Sectional Meeting, United States.

- Spring Eastern 2021: *Hopf algebras, tensor categories, and related homological methods*

Graduate Algebra Symposium, Texas.

- 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.

- Fall 2020
- Spring 2019

Seminar Organization

Quantum Symmetries Seminar, Texas A&M University.

- 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–present: Organizer
- Fall 2019: Mentor
- Spring 2019: Mentor

Student Government

Math Grad Student Diversity Committee, Texas A&M University.

- 2020–present: Co-Founder

AMS Chapter, Texas A&M University.

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

AWM Chapter Peer Mentoring Program, Texas A&M University.

- 2018–present: Mentor

Fulbright Student Association, Texas A&M University.

- 2017–2018: IT officer and Webmaster

Teaching

Texas A&M University

Instructor.

- 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

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

Private Tutor

Undergraduate algebra and calculus, high school mathematics and physics.

- 2008–2015

Outreach and Service

Panel Discussions

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–present: Volunteer

Science Contests

Texas Science Olympiad, Texas A&M University.

- Spring 2019: Volunteer

Regional Science Bowl, Texas A&M University.

- Spring 2019: Moderator
- Spring 2018: Scientific Judge
- Spring 2017: Scientific Judge

Junior Science Bowl, Texas A&M University.

- Spring 2018: Moderator

Integral Bee, Texas A&M University.

- Spring 2020: Volunteer
- Spring 2018: Volunteer

Derivative Bee, Texas A&M University.

- Fall 2019: Volunteer
- Fall 2018: Volunteer
- Fall 2017: Volunteer

High School Math Contest, Texas A&M University.

- Fall 2018: Grader
- Fall 2017: Grader
- Fall 2016: Grader

Science Fairs

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

Student Government

Graduate and Professional Student Government, Texas A&M University.

- 2019: Senator
- Spring 2017: Participant

Conferences and Workshops *(All events were fully or partially funded.)*

2021

Jan **Joint Mathematics Meetings**, *Washington, District of Columbia.*

2020

Nov **Algebra and Combinatorics Seminar**, *Texas A&M University.*

TBD **Algebra Seminar**, *University of Texas at Arlington.*

Nov **Algebra and Algebraic Geometry Seminar**, *University of Washington.*

Nov **Binghamton University Graduate Conference in Algebra and Topology**, *Binghamton University.*

Nov **Algebra and Geometry Seminar**, *Iowa State University.*

Nov **Algebra Seminar**, *Indiana University Bloomington.*

Oct **Graduate Algebra Symposium**, *University of Texas at Arlington.*

Oct **Seminario de Algebra Homologica y Hierbas Afines**, *Universidad de Buenos Aires, Argentina.*

Oct **Algebra Seminar**, *University of Oregon.*

Sep **Algebra and Number Theory Seminar**, *Louisiana State University.*

Sep **Algebra and Number Theory Seminar**, *Texas Tech University.*

Sep **Quantum Symmetries Student Seminar**, *The Ohio State University.*

Aug **Encuentro Virtual de Algebra Homologica**, *Universidad de Buenos Aires, Universidad Nacional de Mar del Plata, Universidad Nacional del Sur, Argentina.*

Aug **Operad Pop-Up**, *MATRIX, Australia.*

[†]Aug **Quantum groups, Categorification, Knot invariants, and Soergel bimodules**, *University of Oregon.*

[†]Jul **Applied Category Theory**, *Massachusetts Institute of Technology.*

[†]Jul **Workshop on Homotopy Type Theory/Univalent Foundations**, *Oxford, United Kingdom.*

[†]Jun **Tensor Categories, Quantum Groups and Related Topics**, *University of Nottingham, United Kingdom.*

May **Cross Atlantic Representation Theory and Other Topics Online**, *University of Michigan.*

May **A Zoom Special Session on DG Methods in Commutative Algebra and Representation Theory**, *University of Utah.*

[†]May **AMS Spring Western Sectional Meeting**, *California State University, Fresno.*

[†]Apr **Graduate Student Topology and Geometry Conference**, *Indiana University Bloomington.*

[†]Apr **Underrepresented Students in Topology and Algebra Research Symposium**, *University of Iowa.*

[†]Apr **Algebra and Geometry Seminar**, *Iowa State University.*

Mar **Arithmetic Geometry is Online in Zoom, Everyone**, *University of Georgia.*

[†]Mar **(∞, n) -Categories, Factorization Homology, and Algebraic K -Theory**, *Mathematical Sciences Research Institute.*

[†]Canceled or hosted online due to COVID-19.

- †Mar **Tensor Categories and Topological Quantum Field Theories**, *Mathematical Sciences Research Institute*.
- †Mar **Critical Issues in Mathematics Education 2020: Today's Mathematics, Social Justice, and Implications for Schools**, *Mathematical Sciences Research Institute*.
- Mar **Southwest Local Algebra Meeting**, *Tulane University*.
- Feb **Seattle Noncommutative Algebra Day**, *University of Washington*.
- Feb **Introductory Workshop: Higher Categories and Categorification**, *Mathematical Sciences Research Institute*.
- Feb **Connections for Women: Higher Categories and Categorification**, *Mathematical Sciences Research Institute*.
- Jan **Introductory Workshop: Quantum Symmetries**, *Mathematical Sciences Research Institute*.
- Jan **Connections for Women: Quantum Symmetries**, *Mathematical Sciences Research Institute*.

2019

- Nov **Texas Geometry and Topology Conference**, *Texas A&M University*.
- Oct **Graduate Algebra Symposium**, *Texas A&M University*.
- Oct **Texas Algebraic Geometry Seminar**, *Texas A&M University*.
- Jul **Ragnar's Ramifications in Algebra and Geometry Emerging Workshop**, *Fields Institute for Research in Mathematical Sciences, Canada*.
- Jun **Research School on Quantum Symmetries**, *Universidad de los Andes, Colombia*.
- Jun **Commutative Algebra and its Interaction with Algebraic Geometry**, *University of Notre Dame*.
- Jun **Summer Research Program on Quantum Symmetries**, *Ohio State University*.
- Jun **Graduate Student Conference in Algebra, Geometry, and Topology**, *Temple University*.
- May **Homotopy meets Homology**, *Hamilton Mathematics Institute at Trinity College Dublin, Ireland*.
- Apr **Texas-Oklahoma Representations and Automorphic Forms**, *University of North Texas*.
- Mar **Graduate Student Topology and Geometry Conference**, *University of Illinois at Urbana-Champaign*.
- Mar **Graduate Algebra Symposium**, *University of Oklahoma*.
- Feb **Southwest Local Algebra Meeting**, *University of Texas at El Paso*.
- Feb **Gathering in Graduate Expository Mathematics**, *Texas A&M University*.
- Feb **Texas Algebraic Geometry Symposium**, *University of Texas at Austin*.
- Jan **Frobenius Action in Commutative Algebra: Recent Developments**, *Institut de Matematica de la Universitat de Barcelona, Spain*.
- Jan **Categorification in Quantum Topology and Beyond**, *Erwin Schrodinger International Institute for Mathematics and Physics, Austria*.

2018

- Nov **Texas Algebraic Geometry Seminar**, *Texas A&M University*.
- Oct **Graduate Algebra Symposium**, *University of Texas at Arlington*.

- Sep **Quantum Computation and Information Workshop**, *Texas A&M University*.
- Jul **ICM 2018 Satellite Meeting: A Pan-Hemispheric Celebration of Mathematics in Miami**, *University of Miami*.
- Jun **Workshop in Geometric Topology**, *Calvin College*.
- May **Stable Cohomology: Foundations and Applications**, *Snowbird*.
- Apr **Graduate Algebra Symposium**, *University of North Texas*.
- Apr **Texas Algebraic Geometry Symposium**, *Texas A&M University*.
- Mar **Gathering in Graduate Expository Mathematics**, *Texas A&M University*.
- 2017**
- Jun **Research Computing Week**, *Texas A&M University*.
- 2016**
- Nov **Texas Geometry and Topology Conference**, *Texas A&M University*.
- Mar **Seminaire Grothendieck**, *Institut des Hautes Etudes Scientifiques*, France.
- 2013**
- Jul **6a Escuela JAE de Matematicas**, *Instituto de Ciencias Matematicas*, Spain.
- 2012**
- Jul **5a Escuela JAE de Matematicas**, *Instituto de Ciencias Matematicas*, Spain.