

Pablo S. Ocal

Curriculum Vitae

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Education

- 2016–present **Ph.D. Student, Mathematics**, Texas A&M University, TX.
Supervisor: Sarah Witherspoon
- 2015–2016 **M.Sc., Mathematics**, Université Pierre-et-Marie-Curie (Paris VI), France.
Supervisor: Bruno Kahn
- 2010–2015 **B.Sc., Mathematics**, Universitat Autònoma de Barcelona, Spain.
Supervisor: Jaume Aguade Bover
- 2010–2015 **B.Sc., Physics**, Universitat Autònoma de Barcelona, Spain.
Supervisor: 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.
• arXiv:1909.02181 (submitted).

Conference Talks

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.
- †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.

† Canceled or hosted online due to COVID-19.

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

- 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.

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

2020 **Program Associate**, Mathematical Sciences Research Institute.

- Program: Quantum Symmetries

2016–2018 **E. R. Keown Fellow in Mathematics**, Texas A&M University.

2015 **Fulbright Scholarship**, Fulbright Program, Spain.

2015 **X Becas de Postgrado**, Fundación Mutua Madrileña, Spain.

2012 **JAIE Intro**, Instituto de Ciencias Matemáticas, Spain.

- Program: Introduction to Ramsey Theory

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

2010 **Matrícula 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* (proposed)

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

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 of Record.

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

Teaching Faculty.

- Summer 2020: Summer Educational Enrichment in Math
- 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 Assistant.

- Fall 2014: Foundations of Mathematics

Private Tutor

Undegraduate 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 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

2020

- 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.*
- †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.*
- †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.