

# Caterina Consani | Curriculum Vitae

The Johns Hopkins University, Department of Mathematics  
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Citizenship: Italy; US Permanent Resident

**Research Endeavors:** Arithmetic-Noncommutative Geometry, Algebraic Geometry, Number Theory

## Education

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<b>The University of Chicago</b>	Chicago, IL
Ph.D. in Mathematics (advisor: Prof. S. Bloch)	1996
<b>Universities of Genoa and Turin</b>	Italy
Dottorato di Ricerca in Matematica (Ph.D. advisor: Prof. C. Pedrini)	1993
<b>University of Genoa</b>	Italy
Laurea in Matematica 110/110 <i>Summa cum Laude</i> (Bachelor Degree advisor: Prof. C. Pedrini)	1986

## Professional Experience

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<b>Department of Mathematics, Johns Hopkins University</b>	Baltimore, MD
Professor of Mathematics	2008-
Associate Professor of Mathematics	2005-2008
<b>Department of Mathematics, University of Toronto</b>	Toronto, ON Canada
Associate Professor of Mathematics (tenured)	2003-2005
Assistant Professor of Mathematics	2000-2003
<b>Institute for Advanced Study</b>	Princeton, NJ
Member of the School of Mathematics	1999-2000
<b>Department of Mathematics, Cambridge University</b>	Cambridge, England
Research Associate	1998
<b>Department of Mathematics, M.I.T.</b>	Cambridge, MA
C.L.E. Moore Instructor	1996-1999

## Research Awards

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- Simons Foundation: Collaboration Grant for Mathematicians n. 6914937 (2020-2025)
- Simons Foundation: Collaboration Grant for Mathematicians n. 353677 (2015-2020)
- National Science Foundation: NSF–DMS Special Meetings Grant n. 1854546 (2019–2020)
- National Science Foundation: NSF–DMS Special Meetings Grant n. 1701934 (Co-PI) (2017–2018)
- National Science Foundation: NSF–DMS Research Grant n. 1069218 (2011–2015)
- National Science Foundation: NSF–DMS Special Meetings Grant n. 0852421 (2009–2011)
- National Science Foundation: NSF–FRG Research Grant n. 0652431 (2007–2011)
- Natural Sciences and Eng. Res. Council Canada: Research Grants nn. 72016789, 72024520 (2000–2005)
- National Science Foundation: NSF–DMS Research Grant n. 9701302 (1997–2000)

## Synergistic Activities

Last 10 years

**Co-Organizer of the Conference “Cyclic Cohomology at 40: achievements and future prospects”**

27 September-1 October 2021, Fields Institute, Toronto (Canada)

**Co-Organizer of the Workshop “Riemann-Roch in characteristic 1 and related topics”**

Jami Program 2019, Johns Hopkins University, Baltimore (MD)

18-20 October 2019

**Co-Organizer of the Conference “Toposes in Como”**

Second edition of the Conference “Topos à l’IHES” (School & Conference)

Villa del Grumello, Como (Italy)

24-26 June 2018

**Co-organizer of the Conference “Noncommutative Geometry: Number Theory”**

Conference in honor of the 70th birthday of Alain Connes

Fudan University, Shanghai (China)

4-7 May 2017

**Co-organizer of the Conference “Noncommutative Geometry – Festival”**

Conference in honor of the 70th birthday of Henri Moscovici

University of Texas A&M, College Station TX

30 April-3 May 2014

**Co-organizer of the Conference “Number-Theory and Related Topic”, Johns Hopkins University**

Jami Program 2013, Conference in honor of Takashi Ono

6-7 April 2013

**Co-organizer of the Conference “Non-commutative Geometry and Arithmetic”**

Jami Program 2011, Johns Hopkins University

22-25 March 2011

**Co-organizer of the Conference “Noncommutative Geometry and Applications to Number Theory”**

Ohio State University, Columbus (OH)

12-16 April 2010

**Co-organizer of the Conferences “Noncommutative Geometry and Geometry over the Field with 1 elt”**

Vanderbilt University & Johns Hopkins University

April 2008-09

**Co-organizer of the Workshop “Arithmetic Geometry: Diophantine approximation, Arakelov theory”**

Fields Institute, University of Toronto, Toronto (ON), (Canada)

20-24 October 2008

## Visiting Positions

Last 10 years

- Ohio State University (Several visits: 2013-2019)
- Shanghai Center for Mathematical Sciences (China) (April-May 2017)
- IHES (France) (November 2015)
- Hausdorff Center for Mathematics - Bonn (Germany) (November 2014, November 2008)
- MFO - Oberwolfach (Germany) (Several visits 2011-2020)
- RIMS - Kyoto (Japan) (November 2010)
- Utrecht University (Netherlands) (March 2010)
- Fields Institute - Toronto (Canada) (November 2008)

## Selected Invited Lectures

Last 10 years

- University of Western Ontario Colloquium talk at the Department of Mathematics, December 2020
- Texas A&M University Invited research seminar at the Department of Mathematics, September 2019
- Ohio State University Several invited research seminars at the Department of Mathematics, 2014-2019
- Shanghai Center for Mathematical Sciences (China) Invited research talk at the Conference: “Non-commutative Geometry 2017: A Celebration of Alain Connes’ 70th Birthday”, May 2017
- IHES (Paris, France) Plenary talk at the Conference: “Topos à l’IHES”, November 2015
- Hausdorff Center for Mathematics (Bonn, Germany) Invited research talk at the “Trimester Program in Noncommutative Geometry and its Applications”, November 2014

- **Carleton University, (Ottawa, Canada)** Plenary talk at “XIII Meeting of the Canadian Number Theory Association”, July 2014
- **University of Washington St. Louis** Colloquium talk at Department of Mathematics, April 2014
- **Université Paris VII (Paris, France)** Invited research talk at Department of Mathematics, April 2014
- **Université de Strasbourg (France)** Invited research talk at Department of Mathematics, January 2014
- **Centro de Ciencias Pedro Pascual, Benasque (Spain)** Invited research talk at the Conference “Quantum Mechanics, Operator Theory and the Riemann Zeta Function”, 17-23 June 2012
- **MFO Oberwolfach (Germany)** Invited research talk at the Meeting “Noncommutative Geometry”, September 9-17 2011
- **RIMS Kyoto (Japan)** Invited research talk at the Workshop “Noncommutative Geometry and Number Theory”, November 25-26 2010
- **Utrecht University (Netherlands)** Invited talks at the Graduate School of Mathematics (“Masterclass Graduate School”), March 2010
- **Texas A&M University** Invited research talk at Department of Mathematics, October 2009
- **Vanderbilt University** Invited research talk at Meeting “The Seventh Annual Spring Institute in Noncommutative Geometry and Operator Algebras”, May 2009
- **Fields Institute (Toronto, Canada)** Invited research talk at the Conference “Arithmetic Geometry: Diophantine Approximation and Arakelov Theory”, 20-24 October 2008
- **Hausdorff Center for Mathematics (Bonn, Germany)** Invited research talk at the “Trimester Program in Geometry and Physics”, November 2008
- **University of Amsterdam (Netherlands)** Invited research talk at 5ECM: Mini-Symposium in “Applications on Noncommutative Geometry”, July 2008
- **Boston University** Invited research talk at the Conference “Motives, Quantum Field Theory and Pseudodifferential Operators”, June 2008

## Editorial Work & Reviewer Service

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- **Member of the Editorial Board** of *Journal of the Institute of Mathematics of Jussieu*
- **Member of the Editorial Board** of *Journal of Number Theory*
- **Member of the Editorial Board** of *Rendiconti del Seminario Matematico della Università di Padova*
- **Co-Editor of the Proceedings** *Advances in Noncommutative Geometry, On the Occasion of Alain Connes' 70th Birthday, Springer (2019)*
- **Co-Editor of the Proceedings** *Proceedings of the 21st JAMI Conference, Baltimore 2009, JHUP (2012)*
- **Co-Editor of the book** *Noncommutative geometry and number theory: where arithmetic meets geometry and physics, Aspects of Mathematics E 37, Vieweg-Verlag 2006*
- **Referee Work** for (selected): NSF, NSERC, Royal Society URF (UK), Math. Rev., Zentralblatt Math., “Algebra & Number Theory”, “Canadian Journal of Mathematics”, “Journal of Number Theory”, “Journal of Algebraic Geometry”, “Journal für die reine und angewandte Mathematik”, “American Journal of Mathematics”, “Journal of Pure and Applied Algebra”, “Pacific Journal of Mathematics”, etc

## Supervision of Ph.D Theses

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- **Luqiao Xu** Ph.D. student at JHU (1st year) 2020- (Expected thesis defense May 2025)
- **Sean Owen** Ph.D. student at JHU (3rd year) 2019- (Expected thesis defense May 2023)

- **Benjamin Diamond** Ph.D. student at JHU 2016-2017, Thesis title: *Smooth Surfaces in Smooth Fourfolds with Vanishing First Chern Class*
- **Kalina Mincheva** Ph.D. student at JHU 2011-2016, Thesis title: *Semiring congruences and tropical geometry*
- **JaiUng Jun** Ph.D. student at JHU 2010-2015, Thesis title: *Algebraic geometry over semistructures and hyperstructures in characteristic one*
- **Jeffrey Tolliver** Ph.D. student at JHU 2010-2015, Thesis title: *Hyperstructures and idempotent semistructures*
- **Jingjing Zhang** Supervision at JHU, 2010-2014
- **Abhishek Banerjee** Ph.D. student at JHU 2005-2009, Thesis title: *Nearby Cycles, Archimedean Complex and Periodicity in Cyclic Homology*
- **Susama Agarwala** Ph.D. student at JHU (co-supervision) 2005-2008, Thesis title: *The Geometry of Renormalization*
- **Geoffrey D. Lynch** Ph.D. student at U. of Toronto 2004-2008, Thesis title: *Local Monodromy Operator as an Algebraic Cycle*

## Postdoctoral Fellows Supervision

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- **Aurélien Sagnier** J.J. Sylvester Assistant Professor 2019-2022
- **Snigdhan Mahanta** J.J. Sylvester Assistant Professor 2008-2010
- **Eugene Ha** J.J. Sylvester Assistant Professor 2006-2009

## Supervision of Undergraduate Theses

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- **Sinan Ozdemir** Undergraduate student at JHU 2012-2013, Thesis title: *Elliptic Curves, Homomorphic Cryptography and its Applications*

## Teaching at the College

Last 10 years

- **2021** Calculus II (Bio&Medicine)  
Second part of a Calculus course for the College. Topics: differential equations, linear algebra, multivariable calculus; combinatorics, probability
- **2020, 2019** Honors Algebra II  
Second part of an advanced course in abstract algebra for the College. Topics: Euclidean, principal, and factorial rings; polynomial rings, Galois theory
- **2018** Introduction to Algebraic Geometry  
Introductory course in Algebraic Geometry for the College
- **2020, 2017, 2011** Honors Linear Algebra  
Advanced course in linear algebra for the College
- **2016, 2012, 2010, 2008** Advanced Algebra I  
First part of an advanced course in abstract algebra for the College. Topics: groups and rings theory
- **2014, 2013** Advanced Algebra II  
Second part of an advanced course in abstract algebra for the College
- **2010** Linear Algebra  
Linear Algebra for the College
- **2009** Calculus II  
Course in Calculus (Engineering and Physics)

- **2008** Calculus I  
Basic course in Analysis

## Graduate Teaching

Last 10 years

- **2020, 2019, 2016, 2015, 2013, 2012, 2011, 2010, 2008** Algebraic Number Theory  
First part of a graduate course in Algebraic Number Theory (1st year graduate class). Topics: algebraic integers, number fields, Dirichlet's Theorem on units, cyclotomic fields, local fields, valuations, decomposition and inertia groups, ramification, Riemann-Roch theory.  
Alternatively: Graduate course on the theory of the zeta function over global fields of positive characteristic (Hasse-Weil zeta functions)  
Alternatively: An introduction, at the graduate level, in Arithmetic Geometry  
Alternatively: Class Field Theory  
Alternatively: An introduction to the arithmetic of function fields
- **2018, 2012** Algebra II  
Second part of a graduate course in Abstract Algebra (1st year graduate class). Topics: Galois theory, representation theory of finite groups.
- **2017, 2014** Topics in Algebra  
Homological Algebra in Nonabelian Categories  
Archimedean Cyclic (Co)homology: Development of a theory of Archimedean cyclic (co)homology and its application in the description of the Archimedean local factors of L-functions of arithmetic varieties.
- **2017, 2009** Algebraic Geometry  
Graduate course on the theory of sheaves and algebraic schemes