

## ILYA SHAPIRO

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### CITIZENSHIP:

Canadian.

### EDUCATION:

Ph.D., Mathematics, University of Chicago, 2004 (Advisor: A. Beilinson).  
M.S., Mathematics, University of Chicago, 1999.  
Hon.B.Sc., Mathematics and Statistics, York University, 1998.

### EMPLOYMENT:

Associate Professor, University of Windsor, Jul. 2015 – present  
Assistant Professor, University of Windsor, Jan. 2011 – Jun. 2015.  
(Parental leave: Winter 2012, Winter 2013)  
Visiting Researcher, University of Waterloo, Sept. 2010 – Dec. 2010.  
Visiting Researcher, Max Planck Institute for Mathematics, Bonn, Sept. 2009 – Aug. 2010.  
Visiting Researcher, Institut des Hautes Études Scientifiques, Bures-sur-Yvette, Sept. 2008  
– May 2009.  
Visiting Researcher, Max Planck Institute for Mathematics, Bonn, Sept. 2007 – July 2008.  
Visiting Research Assistant Professor, University of California, Davis, July 2004 – July 2007.

### PAPERS:

Anti-Yetter-Drinfeld modules for quasi-Hopf algebras, (with I. Kobyzev), *SIGMA: Symmetry Integrability Geom. Methods Appl.*, 14 (2018), 098, 10 pages.  
A categorical approach to cyclic cohomology of quasi-Hopf algebras and Hopf algebroids, (with I. Kobyzev), *Appl. Categ. Structures*, doi.org/10.1007/s10485-018-9544-0.  
Extensions and duality, arXiv:1803.03572, 16 pages.  
On the anti-Yetter-Drinfeld module-contramodule correspondence, *to appear in J. Non-commut. Geom.*, 32 pages.  
Some invariance properties of cyclic cohomology with coefficients, arXiv:1611.01425, 29 pages.  
Monoidal Categories, 2-Traces, and Cyclic Cohomology (with M. Hassanzadeh, M. Khalkhali), *Canad. Math. Bull.*, doi.org/10.4153/CMB-2018-016-4.  
Cyclic homology for Hom-associative algebras (with M. Hassanzadeh, S. Sütli), *J. Geom. Phys.*, Volume 98 (2015), 40-56.

- On the relative dual of an  $S^1$ -gerbe over an orbifold (with X. Tang, H. Tseng), *Advances in Mathematics* 270 (2015), 1-20.
- Frobenius map and the  $p$ -adic Gamma function, *Journal of Number Theory*, Volume 132, Issue 8, (2012), 1770–1779.
- Locally compact abelian groups with symplectic self-duality (with A. Prasad, M. K. Vemuri), *Advances in Mathematics* 225 (2010), no. 5, 2429–2454.
- Frobenius map for quintic threefolds, *International Mathematics Research Notices* (2009), Volume 2009, Number 13, 2519–2545.
- Frobenius map on local Calabi-Yau manifolds, *Journal of Mathematical Physics* 50 (2009), no. 2, 022302, 14 pp.
- The BRST reduction of the chiral Hecke algebra, *Advances in Mathematics* 220 (2009), no. 6, 1657–1688.
- Twisted de Rham cohomology, homological definition of the integral and “Physics over a ring” (with A. Schwarz), *Nuclear Physics B*, Volume 809 (2009), no. 3, p. 547–560.
- $p$ -adic superspaces and Frobenius (with A. Schwarz), *Communications in Mathematical Physics*, Volume 282 (2008), Number 1, p. 87–113.
- Gelfand-Fuchs cohomology of invariant formal vector fields (with X. Tang), *Mathematical Research Letters* Volume 15 (2008), Number 1, p. 129–149.
- Supergeometry and Arithmetic Geometry (with A. Schwarz), *Nuclear Physics B*, Volume 756 (2006), Issue 3, p. 207–218.
- Some remarks on Gopakumar-Vafa invariants (with A. Schwarz), *Pure and Applied Mathematics Quarterly* Vol 1 (2005), Number 4, p. 817–826.

#### INVITED TALKS:

- CMS Session on Noncommutative Geometry and Topology, Fredericton, NB June 2018
- Mathematical Congress of the Americas 2017, special session ”Stringy Geometry”, Montreal, July 2017
- Conference, Cyclic Homology, IMPAN Warsaw, Poland, October 17–21, 2016
- University of Western Ontario, Noncommutative Geometry Workshop, June 11, 2015
- University of Western Ontario, Colloquium, November 12, 2014
- Washington University, St. Louis, AMS Sectional Meeting, Special Session on Groupoids in Analysis and Geometry, October 19, 2013
- University of Western Ontario, Algebra Seminar, April 12, 2013
- Wilfrid Laurier University, Colloquium, April 29, 2011
- Southern Ontario Groups and Geometry Meeting, Fields Institute, April 1–2, 2011
- University of Waterloo, Geometry Seminar, November 24, 2010
- University of Notre Dame, Lie Theory Seminar, September 2, 2010
- University of Windsor, Colloquium, August 18, 2010
- Workshop on Effective methods in  $p$ -adic cohomology, Mathematical Institute, University of Oxford, March 15–19, 2010
- University of Waterloo, Colloquium, March 8, 2010
- University of Bonn, Representation Theory Seminar, February 5, 2010
- University of Utah, Algebraic Geometry Seminar, January 12, 2010

**TEACHING EXPERIENCE:**

**University of Windsor** (2011–present). Fully responsible for all instruction. Grading assisted by Graduate Teaching Assistants.

- 62-498-17/521 Ring Theory and Modules, (F16, W18, 5-6 students).
- 62-420/520 Introduction to Group Theory (F13, F14, 2-7 students).
- 62-343 Graph Theory, (W15, 8 students).
- 62-342 Combinatorics, (W14, 20 students).
- 62-322 Number Theory, (W14, F11, W11, 10-15 students).
- 62-318 Complex Variables, (W15, 35 students).
- 62-221 Linear Algebra - III, (W18, 20 students).
- 62-216 Differential Equations, (F13, F16, 110-140 students).
- 62-130 Introduction to Calculus, (F15, 90 students).
- 62-126 Linear Algebra - Engineering, (F12, F14, 110-170 students).
- 62-120 Linear Algebra, (F12, 130 students).

**University of Waterloo** (2010). Fully responsible for all instruction. Grading assisted by Graduate Teaching Assistants. Lab component handled by the Engineering department. Class size 110 students.

- MATH 211 Advanced Calculus (Electrical and Computer Engineering).

**University of California at Davis** (2004–2007). Fully responsible for all instruction. Grading assisted by Readers and Teaching Assistants. Class sizes from 20 to 240 students. Teaching load of 3 to 4 quarter length courses per year.

- MAT-016A/B Short Calculus.
- MAT-021A/B Calculus (with discussion section).
- MAT-115B Number Theory.
- MAT-167 Applied Linear Algebra.
- MAT-150B Modern Algebra.

**University of Chicago** (2000–2004). Fully responsible for all instruction. Grading assisted by Teaching Assistant. Class sizes from 10 to 30 students. Teaching load of 3 quarter length courses per year.

- Math 151-152-153 Calculus.
- Math 195-196 Multi-variable Calculus and Linear Algebra.

**GRANTS:**

NSERC Discovery Grant, 2011–2016(8)+1  
 NSERC Early Career Researcher Supplement, 2011–2016(8)+1  
 University of Windsor Startup Grant, 2011–

**TRAINING OF HIGHLY QUALIFIED PERSONNEL:****PDF:**

September 2017 – December 2017, Ivan Kobyzev, Project: Categorical approach to cyclic cohomology of quasi-Hopf algebras and Hopf algebroids.

September 2016 – December 2016, Ivan Kobyzev, Project: Categorical approach to cyclic homology.

**PhD:**

September 2015 – present, Justin Lariviere (co-supervised with Wai-Ling Yee).

**Masters:**

September 2018 – present, Shaun Ostoic.

September 2015 – January 2018, Fatimah Asiri, Major paper: The Price of Stocks, Geometric Brownian Motion, and Black Scholes Formula.

September 2012 – June 2014, Reginald Robson, Thesis: On the Divided Power Structures in Super-Rings.

**OTHER ACTIVITIES:**

Co-organizer (with Masoud Khalkhali): Fields Institute conference at Western University on Noncommutative Geometry and its Applications, Dec 2017

Co-organizer (with Masoud Khalkhali): CMS Winter 2017 session on Cyclic homology and Noncommutative Geometry (University of Waterloo)

Chair of the Undergraduate Committee, Outstanding Scholars coordinator, SPDC representative, Academic Standing Committee, Fall 2016

Science Faculty Council, 2015–2016

Organizer of the Colloquium, Fall 2014 – Winter 2015

Executive Committee, Winter 2014

Undergraduate Committee, Winter 2014 – Winter 2015, 2015–2016

Organizer of the Algebra seminar, University of Windsor, Fall 2012 – Winter 2014

Co-organizer of the Colloquium, University of Windsor, Fall 2012/13, Winter 2014

Co-organizer of the Crystalline cohomology seminar, MPIM, Fall 2009

Co-organizer of the Geometric Langlands Correspondence seminar, MPIM, Spring 2008

Co-organizer of the  $D$ -modules and Quantum cohomology seminar, MPIM, Fall 2007

Co-organizer of the Colloquium, UC Davis, Spring 2005

**MEMBERSHIPS:**

CMS

AMS

**AWARDS:**

McCormic Fellowship, 1998–2000

NSERC PGS A, Declined, 1998

Governor General's Silver Medal, 1998

York University Gold Medal, 1998

The Moshe Shimrat Award, 1996

Federal Ministry of Immigration and Citizenship Scholarship, 1995-96

The Irving R. Pounder Award, 1995

Canada Scholarship, 1994-98

York University Scholarship, 1994–98