Sabin Cautis — *Curriculum Vitae*

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Education

- **Harvard University**, Ph.D., 2001–2006,
  Advisor: Joe Harris.
- **University of Waterloo**, BMath. (Hons), mathematics, 1997–2001.

Positions

- **University of British Columbia** Assist. Professor (Canada Research Chair II), Fall 2013 - Present
- **University of Southern California** Assist. Professor, Fall 2012 - 2013
- **Columbia University** Ritt Assist. Professor, Fall 2009 - Summer 2012
- **Math. Sciences Research Inst.** Postdoctoral Fellowship, Spring 2009.
- **Rice University** G.C. Evans Instructor, Fall 2006 - Winter 2008.
- **Mittag-Leffler Institute** Visiting Scholar, Spring 2007.

Areas of Interest

- algebraic geometry, geometric representation theory, knot invariants, categorification, combinatorics.

Grants

- NSF grants DMS-0801939 and DMS-0964439, 2008-2011
- NSF grant DMS-1101439, 2011-2014
- NSERC Discover grant and accelerator, 2014-present

Awards

- André-Aisenstadt Prize, 2014
- Alfred P. Sloan Fellowship, 2011-2013
- Harvard Putnam Fellowship, 2003-2006
- NSERC PGSD2/PGSA Research Scholarship, 2001-2006
- Putnam Fellow and member of winning Putnam team, 1999
- Ranked top 10 in the Putnam Competition, 1997-1999
- Canadian Mathematics Olympiad 1st place, 1997

Publications

25. *Rigidity in Higher Representation Theory*,
    arXiv:1409.0827
24. J. Sussan.
    On a Categorical Boson-Fermion Correspondence,
    arXiv:1403.6019
23. *The Solvable Monodromy Extension Property and Varieties of Log General Type*,
    A celebration of algebraic geometry, Clay Math. Proc. 18, (2013), 119–129. arXiv:1301.5972
22. J. Kamnitzer, S. Morrison.
    Webs and Quantum Skew Howe Duality,
    Math. Annalen (to appear). arXiv:1210.6437
21. A. Licata, J. Sussan.

Braid Group Actions via Categorified Heisenberg Complexes,
Compositio Math. 150 (2014), 105–142. arXiv:1207.5245

20. *Clasp Technology to Knot Homology via the Affine Grassmannian*,
arXiv:1207.2074

19. A. Craw, T. Logvinenko.
Derived Reid's Recipe for Abelian Subgroups of $SL_3(C)$,
J. Reine Angew. Math. (to appear). arXiv:1205.3110

18. A. Licata.
Vertex Operators and 2-Representations of Quantum Affine Algebras,
arXiv:1112.6189

17. A. Licata.
Loop Realizations of Quantum Affine Algebras,
J. Math. Phys. 53 (2012), no. 12, 18pp. arXiv:1112.6188

16. *Flops and About: a Guide*,
Derived Categories in Algebraic Geometry, EMS Congress Reports (2011), no. 8, 61–101. arXiv:1111.0688

15. A. Lauda.
Implicit Structure in 2-representations of Quantum Groups,
Selecta Math. (to appear). arXiv:1111.1431

14. J. Kamnitzer, A. Licata.
Coherent Sheaves on Quiver Varieties and Categorification,
Math. Annalen 357, (2013), no. 3, 805–854. arXiv:1104.0352

13. A. Licata.
Heisenberg Categorification and Hilbert Schemes,
Duke Math Journal 161 (2012), no. 13, 2469–2547. arXiv:1009.5147

12. J. Kamnitzer.
Braiding via Geometric Lie Algebra Actions,
Compositio Math. 148 (2012), no. 2, 464–506. arXiv:1001.0619

11. *Equivalences and Stratified Flops*,
Compositio Math. 148 (2012), no. 1, 185–209. arXiv:0909.0817

10. J. Kamnitzer, A. Licata.
Derived Equivalences for Cotangent Bundles of Grassmannians via Categorical sl_2 Actions,
J. Reine Angew. Math. 675 (2013), 53–99. arXiv:0902.1797

9. J. Kamnitzer, A. Licata.
Categorical Geometric Skew Howe Duality,
Inventiones Math. 180 (2010), no. 1, 111–159. arXiv:0902.1795

8. J. Kamnitzer, A. Licata.
Coherent Sheaves and Categorical sl_2 Actions,
Duke Math Journal 154 (2010), no. 1, 135–179. arXiv:0902.1796

7. J. Kamnitzer. *Knot Homology Via Derived Categories of Coherent Sheaves II, sl(m) Case*,
Inventiones Math. 174 (2008), no. 1, 165–232. arXiv:0710.3216
6. T. Logvinenko.
Geometric McKay Correspondence in Dimension Three,
J. Reine Angew. Math. 636 (2009), 193–236. arXiv:0803.2990
5. J. Kamnitzer. *Knot Homology Via Derived Categories of Coherent Sheaves I, sl(2) Case*,
Duke Math Journal 142 (2008), no. 3, 511–588. math.AG/0701194
4. *The Abelian Monodromy Extension Property for Families of Curves*,
Math. Annalen 344 (2009) no. 3, 717–747. arXiv:0709.3320
3. D. M. Jackson. *On Tutte's Chromatic Invariant*,
Trans. Amer. Math. Soc. 362 (2010), 509–535.
2. D. M. Jackson.
The Matrix of Chromatic Joins and the Temperley-Lieb Algebra,
J. of Combinatorial Theory series B. 89 (2003), no. 1, 109–155.
1. F. Mignosi, J. Shallit, M. Wang, S. Yazdani.
Periodicity, Morphisms, and Matrices,
Theoret. Comput. Sci. 295 (2003), no. 1-3, 107–121.

Teaching

`http://www.math.ubc.ca/~cautis/teaching.html`

University of British Columbia, Fall 2013
Math 253: Multivariable Calculus

University of Southern California, Fall 2012
Math 226: Calculus III

Columbia University, Fall 2011
Math: Calculus IV (2 sections)

Columbia University, Fall 2010
Math: Calculus III (2 sections)

Columbia University, Fall 2009
Math: Calculus I (2 sections)

Rice University, Fall 2008
Math 102: Single Variable Calculus II

Rice University, Spring 2008
Math 212: Multivariable Calculus

Rice University, Fall 2007
Math 428: Topics in Complex Analysis – Several Complex Variables
Math 211: Ordinary Differential Equations and Linear Algebra

Rice University, Fall 2006
Math 381: Introduction to Partial Differential Equations
Math 101: Single Variable Calculus

Harvard: Tutorial Leader, Fall 2005
Holomorphic Vector Bundles on Riemann Surfaces

Harvard: Teaching Fellow, Fall 2003
Math 21A: Multivariable Calculus

Harvard: Teaching Assistant, Fall 2002
Math 260: Graduate Algebraic Geometry, Fall 2002

Workshop Talks

- CRM, Categorification and Geometric Representation Theory, June 2014.
- Humboldt University, Workshop on Modular Iwahori-Hecke Algebras, March 2014.
- UCSD, Western Algebraic Geometry Symposium, November 2013.
- Stony Brook, Quiver Varieties, October 2013.
- Columbia University, Hecke Algebras in Number Theory and Categorification, May 2013.
- University of Oregon, Lie groups, Lie algebras and Their Representations, April 2013.
- Banff (BIRS), Mapping Class Groups and Categorification, April 2013.
- Fields Institute, Geometric Methods in Infinite-dimensional Lie Theory, March 2013.
- AMS meeting, Low dimensional topology, April 2013.
- CIRM Luminy, Catégorie O: géométrie et catégorification (3 talks), December 2012.
- CIRM Luminy, Representation Theory and Symplectic Algebraic Geometry, July 2012.
- Fields Institute, Higher Algebraic and Geometric Structures: Modern Methods in Representation Theory, May 2012.
- Northeastern University, Geometry of Derived Categories and Representation Theory, May 2012.
- Banff (BIRS), Advances in Hyperkähler and Holomorphic Symplectic Geometry, March 2012.
- University of Ottawa, Category Theoretic Methods in Representation Theory, October 2011.
- Banff (BIRS), Derived categories workshop, June 2011.
- Isaac Newton Institute for Mathematical Sciences, Derived Categories and Moduli Spaces, April 2011.
- University of Tokyo, Derived Categories, January 2011.
- Algarve University, XIX Oporto Meeting, July 2010.

- ICTP, Hodge Theory and Applications, June 2010.
- Stony Brook, Categorification of Topological Invariants and Applications, June 2010.
- MSRI, Introductory Knot Homology workshop (2 talks), January 2010.
- University of Michigan, Michigan-Ohio State-UIC joint workshop, November 2009.
- University of Glasgow, Categorification and Geometrisation from Representation Theory (2 talks), April 2009.
- University of Miami, Workshop on Homological Mirror Symmetry and Related Topics, January 2009.
- AMS meeting, Categorification and Knot Homology, January 2009.
- CMS Winter Meeting, Infinite-Dimensional Lie Theory, December 2008.
- University of Georgia, Georgia Topology Conference, May 2008.
- Banff (BIRS), Hodge Theory Workshop, April 2008.
- Kyoto University (RIMS), Knot Homology Conference, May 2007.

Seminar Talks

- UC Berkeley, Representation Theory Seminar, November 2013.
- UCLA, Geometry Seminar, March 2013.
- UBC, Colloquium, January 2013.
- Columbia University, Mathematical Physics Seminar, February 2013.
- Stony Brook, Algebraic Geometry Seminar, February 2013.
- Caltech, Southern California Algebraic Geometry Seminar, November 2012.
- University of Southern California, Geometry and Topology Seminar, January 2012.
- UBC, Colloquium, January 2012.
- UC Los Angeles, Colloquium, December 2011.
- University of Southern California, Colloquium, November 2011.
- CUNY, Representation theory seminar, October 2011.
- University of Zurich, Talks in mathematical physics, May 2011.
- University of British Columbia, Algebraic Geometry Seminar, March 2011.
- LSU, Geometry Seminar, February 2011.
- University of Toronto, Algebra and Geometry Seminar, November 2010.
- Yale University, Algebraic Geometry Seminar, November 2010.
- UIUC, Algebraic Geometry Seminar, November 2010.
- Columbia University, Algebraic Geometry Seminar, October 2010.
- UMass Amherst, Valley Geometry Seminar, October 2010.

- University of Chicago, Algebraic Geometry seminar, October 2010.
- UIC, Algebraic Geometry Seminar, October 2010.
- UPenn, Geometry and Physics Seminar, September 2010.
- University of Toronto, Algebra and Geometry Seminar, March 2010.
- UC Davis, Algebra Seminar, February 2010.
- Columbia University, Algebraic Geometry Seminar, May 2009.
- University of Wisconsin, Algebraic Geometry Seminar, April 2009.
- University of North Carolina, Colloquium, February 2009.
- University of Oregon, Colloquium, January 2009.
- UC Irvine, Colloquium, January 2009.
- UC Davis, Colloquium, January 2009.
- University of Ottawa, Colloquium, December 2008.
- UC San Diego, Colloquium, December 2008.
- Princeton University, Algebraic Geometry Seminar, November 2008.
- University of Southern California, Colloquium, October 2008.
- Stanford University, Algebraic Geometry Seminar, October 2008.
- Harvard University, Algebraic Geometry Seminar, September 2008.
- Rice University, Algebraic Geometry Seminar, April 2008.
- Texas A&M, Geometry Seminar, March 2008.
- UIUC, Algebraic Geometry Seminar, March 2008.
- Stanford University, Algebraic Geometry Seminar, November 2007.
- Rice University, Algebraic Geometry Seminar, September 2007.
- University of Bielefeld, Geometry Seminar, February 2007.
- Mittag-Leffler Institute, Algebraic Geometry Seminar, February 2007.
- Queens University, Algebraic Geometry Seminar, January 2007.
- UT Austin, Algebraic Geometry Seminar, December 2006.
- Rice University, Geometry and Analysis Seminar, November 2006.
- UC Berkeley, Subfactor Seminar, October 2006.
- MIT, Algebraic Geometry Seminar, February 2006.
- Rice University, Algebraic Geometry Seminar, February 2006.
- University of Michigan, Algebraic Geometry Seminar, January 2006.
- MIT, Combinatorics Seminar, April 2004.

Professional Activities

- Committees: USRA, math circle.
- Organized weekly learning seminar at Columbia and USC (fall 2009, 2012).

- Co-organized research program for undergraduates, summer 2010.
- Co-organized TAGS 2008 (Texas algebraic geometry seminar) at Rice University.
- Coach of Putnam team at Rice University in 2007 and 2008 and Columbia University in 2009 and 2010.
- Organized Rice Undergraduate Mathematics Competition 2008.
- Co-organized Current Math and Teaching Seminars at Rice University.
- Reviewer for MathSciNet and various journals.

Personal

- Languages: fluent Romanian, medium level French, basic level Spanish and Hebrew.
- Canadian Citizen.