J. Daniel Christensen

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The University of Western Ontario
London, Ontario N6A 5B7
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RESEARCH INTERESTS

Algebraic topology (especially stable homotopy theory and model categories), homotopy type theory, derived categories, modular representation theory, mathematical physics (quantum gravity), computation, and category theory.

EXPERIENCE

The University of Western Ontario, Department of Mathematics — 2000 to present

Professor, July 1, 2010 to present.
Associate Professor, July 1, 2004 to June 30, 2010.
Assistant Professor, July 1, 2000 to June 30, 2004.
Cross-appointed to Applied Mathematics, 2002 to 2021.
Graduate student supervisory privileges in Physics, January 2022 to present.

The Perimeter Institute for Theoretical Physics — 2001 to present

Affiliate Member.

Institute for Advanced Study, School of Mathematics — 1999 to 2000

Member. Participated in Voevodsky's program on the homotopy theory of schemes.

Johns Hopkins University, Department of Mathematics — 1997 to 2000

Assistant Professor. On leave at IAS during 1999–2000 academic year.

EDUCATION

Massachusetts Institute of Technology — 1992 to 1997

Ph.D. in Mathematics, June 1997, with Haynes R. Miller.
Thesis: Ideals in triangulated categories: phantoms, ghosts and skeleta.

University of Waterloo — 1987 to 1992

Joint Honours Bachelor of Mathematics degree in Pure and Applied Mathematics.

PAPERS SUBMITTED FOR PUBLICATION

47. J. Daniel Christensen and Jarl Taxerås Flaten. Ext groups in homotopy type theory. 29 pages. `https://arxiv.org/abs/2305.09639`

46. Ulrik Buchhotlz, J. Daniel Christensen, Jarl Taxerås Flaten, and Egbert Rijke. Central H-spaces and banded types. 25 pages. `https://arxiv.org/abs/2301.02636`

45. J. Daniel Christensen. Non-accessible localizations. 14 pages. `https://arxiv.org/abs/2109.06670`

PUBLICATIONS

44. John C. Baez, J. Daniel Christensen and Sam Derbyshire. The Beauty of Roots. *Notices of the AMS* **70**(9) (2023), 1495–1497.

43. Kevin Arlin and J. Daniel Christensen. Detecting isomorphisms in the homotopy category. *Algebraic & Geometric Topology* **23**(7) (2023), 2975–2991.

42. J. Daniel Christensen and Luis Scoccola. The Hurewicz theorem in homotopy type theory. *Algebraic & Geometric Topology* **23**(5) (2023), 2107–2140.

41. J. Daniel Christensen and Enxin Wu. Exterior bundles in diffeology. *Israel Journal of Mathematics* **253** (2023), 673–713.

40. J. Daniel Christensen and Martin Frankland. On good morphisms of exact triangles. *Journal of Pure and Applied Algebra* **226**(3) (2022), 106846, 33 pages.

39. J. Daniel Christensen and Egbert Rijke. Characterizations of modalities and lex modalities. *Journal of Pure and Applied Algebra* **226**(3) (2022), 106848, 21 pages.

38. J. Daniel Christensen and Enxin Wu. Smooth classifying spaces. *Israel Journal of Mathematics* **241** (2021), 911–954.

37. J. Daniel Christensen, Morgan Opie, Egbert Rijke, Luis Scoccola. Localization in homotopy type theory. *Higher Structures* **4**(1) (2020), 1–32.

36. J. Daniel Christensen and Enxin Wu. Diffeological vector spaces. *Pacific Journal of Mathematics* **303**(1) (2019), 73–92.

35. Counterexamples to conjectures about Subset Takeaway and counting linear extensions of a Boolean lattice, with Andries E. Brouwer. *Order* **35**(2) (2018), 275–281.

34. Higher Toda brackets and the Adams spectra sequence in triangulated categories, with Martin Frankland. *Algebraic & Geometric Topology* **17**(5) (2017), 2687–2735.

33. Tangent spaces of bundles and of filtered diffeological spaces, with Enxin Wu. *Proceedings of the AMS*, **145**(5) (2017), 2255–2270.

32. Tangent spaces and tangent bundles for diffeological spaces, with Enxin Wu. *Cahiers de Topologie et Geométrie Différentielle Catégoriques*, **57**(1) (2016), 3–50.

31. The homotopy theory of diffeological spaces, with Enxin Wu. *New York J. Math.* **20** (2014), 1269–1303.

30. Ghost numbers of group algebras II, with Gaohong Wang. *Algebras and Representation Theory* **18**(3) (2015), 849–880.

29. The *D*-topology for diffeological spaces, with J. Gord Sinnamon and Enxin Wu. *Pacific Journal of Mathematics* **272**(1) (2014), 87–110.

28. Ghost numbers of group algebras, with Gaohong Wang. *Algebras and Representation Theory* **18**(1) (2015), 1–33.

27. Freyd's generating hypothesis for groups with periodic cohomology, with Sunil Chebolu and Ján Mináč. *Canadian Mathematical Bulletin* **55**(1) (2012), 48–59.

26. The sub-leading asymptotic behaviour of area correlations in the Barrett-Crane model, with Igor Khavkine, Etera Livine and Simone Speziale. *Class. Quantum Grav.* **27** (2010), 035012, 19 pages.

25. A Dual Non-abelian Yang-Mills Amplitude in Four Dimensions, with J. Wade Cherrington. *Nuclear Physics B* **813**(3) (2009), 370–382.

24. Numerical evidence of regularized correlations in spin foam gravity, with Etera R. Livine and Simone Speziale. *Physics Letters B* **670**(4-5) (2009), 403–406.

23. Eigentheory of Cayley-Dickson algebras, with Daniel Biss, Dan Dugger and Daniel Isaksen. *Forum Mathematicum* **21**(5) (2009), 833–851.

22. Ghosts in modular representation theory, with Sunil Chebolu and Ján Mináč. *Advances in Mathematics* **217**(6) (2008), 2782–2799.

21. Groups which do not admit ghosts, with Sunil Chebolu and Ján Mináč. *Proceedings of the AMS*, **136**(4) (2008), 1171–1179.

20. Dual computations of non-abelian Yang-Mills on the lattice, with J. Wade Cherrington and Igor Khavkine. *Physics Review D* **76** 094503 (2007), 17 pages.

19. Large annihilators in Cayley-Dickson algebras II, with Daniel Biss, Daniel Dugger and Daniel Isaksen. *Boletin de la Sociedad Matematica Mexicana (3)* **13**(2) (2007), 269–292.

18. *q*-deformed spin foam models of quantum gravity, with Igor Khavkine. *Classical and Quantum Gravity* **24** (2007), 3271–3290.

17. The generating hypothesis for the stable module category of a *p*-group, with Dave Benson, Sunil Chebolu and Ján Mináč. *J. Algebra* **310**(1) (2007), 428–433.

16. Finiteness of Lorentzian 10j symbols and partition functions. *Classical and Quantum Gravity* **23** (2006), 1679–1687.

15. Positivity in Lorentzian Barrett-Crane models of quantum gravity, with J. Wade Cherrington. *Classical and Quantum Gravity* **23** (2006), 721–736.

14. Causal sites as quantum geometry, with Louis Crane. *J. Math. Physics* **46** (2005), 122502, 17 pages.

13. Duality and pro-spectra, with Daniel C. Isaksen. *Algebraic & Geometric Topology* **4** (2004), 781–812.

12. Obstruction theory in model categories, with Daniel C. Isaksen and William G. Dwyer. *Advances in Mathematics* **181** (2004), 396–416.

11. Asymptotics of $10j$ symbols, with John C. Baez and Greg Egan. *Classical and Quantum Gravity* **19** (2002), 6489–6513.

10. Spin foam models of Riemannian quantum gravity, with John C. Baez, Thomas R. Halford and David C. Tsang. *Classical and Quantum Gravity* **19** (2002), 4627–4648.

9. Quillen model structures for relative homological algebra, with Mark Hovey. *Math. Proc. Cambridge Philos. Soc.* **133 Part 2** (2002), 261–293.

8. Positivity of spin foam amplitudes, with John C. Baez. *Classical and Quantum Gravity* **19** (2002), 2291–2305.

7. An efficient algorithm for the Riemannian $10j$ symbols, with Greg Egan. *Classical and Quantum Gravity* **19** (2002), 1184–1193.

6. Failure of Brown representability in derived categories, with Bernhard Keller and Amnon Neeman. *Topology* **40** (2001), 1339–1361.

5. Phantom maps and chromatic phantom maps, with Mark Hovey. *American Journal of Mathematics* **122** (2000), 275–293.

4. Ideals in triangulated categories: phantoms, ghosts and skeleta. *Advances in Mathematics* **136** (1998), 284–339.

3. Phantom maps and homology theories, with Neil P. Strickland. *Topology* **37** (1998), 339–364.

2. David Gale's subset take-away game, with Mark Tilford. *American Mathematical Monthly* **104** (1997), 762–766.

1. The causal structure of two-dimensional spacetimes, with Robert B. Mann. *Classical and Quantum Gravity* **9** (1992), 1769–1786.

Volumes edited

2. J. Michael Boardman, J. Daniel Christensen, Donald M. Davis, Haynes R. Miller and Jack Morava, eds. *Complex cobordism in homotopy theory: its impact and prospects.* Homology, Homotopy and Applications **10**(3) (2008), 368+xix pp. International Press, Somerville, MA.

1. Luchezar L. Avramov, J. Daniel Christensen, William G. Dwyer, Michael A. Mandell and Brooke E. Shipley, eds. *Interactions between Homotopy Theory and Algebra.* Contemporary Math. **436** (2007), 334pp. Amer. Math. Soc., Providence, RI.

Awards and Grants since 1997 (in Canadian dollars)

NSERC Discovery Grant, April 2022 to April 2027, $24,000/year.

Fields Institute grant to support a research-in-teams event at UWO. Applied for in October 2021, for event in June 2022. $10,000.

NSERC Discovery Grant, April 2016 to April 2022, $22,000/year.

Faculty of Science grant to support a research-in-teams event at UWO. Grant awarded in 2019, event held in June 2022. $14,840.

PIMS grant to support a workshop on Homotopy Type Theory and Univalent Foundations, May 2016, $5,000.

Faculty of Science grant to support a workshop on Homotopy Type Theory and Univalent Foundations, May 2016, $2,250.

AARMS grant to support a workshop on Homotopy Type Theory and Univalent Foundations, May 2016, $2,000.

NSF grant to support a workshop on Homotopy Type Theory and Univalent Foundations, May 2016, $13,750.

Fields Institute grant to support a workshop on Homotopy Type Theory and Univalent Foundations, May 2016, $18,000.

NSERC Discovery Grant, April 2011 to April 2016, $26,000/year.

University of Western Ontario Florence Bucke Science Prize, 2010.

University of Western Ontario Faculty Scholar Award, 2008–2010, $7000/year.

SHARCNet Graduate Student Funding, 2008, $8,000.

Faculty of Science Postdoctoral Funding, 2007–2011, $31,000/year.

Faculty of Science Distinguished Research Professor, 2007–2008.

NSERC operating grant, April 2006 to April 2011, $18,000/year.

Fields Institute grant to support a Fields Institute Program on Geometric Applications of homotopy theory, January to June 2007, $250,000 (with Rick Jardine).

SHARCNet Graduate Student Funding, 2003 to 2005, $27,720.

Fields Institute grant to support a Fields Institute Program in Applied Homotopy Theory, held at Western, September 2003, $42,500 (with Rick Jardine).

NSERC equipment grant for Beowulf cluster, 2002, $12,000 (with Stu Rankin).

Academic Development Fund Small Grant for Beowulf cluster, 2002, $7475.

SHARCNET Research Fellowship, 2002 to 2003, $18,000.

Premier's Research Excellence Award, 2001 to 2006, $150,000.

SHARCNet fellowship for undergraduate research using parallel computation, May 2001, $3000.

Fields Institute grants to support the Ontario Topology Seminar, October 2000 ($1000) and October 2001 ($2000) (with Rick Jardine).

NSERC operating grant, April 2001 to April 2006, $18,000/year.

University of Western Ontario Start-up funds, July 2000, $15,000.

Offered three year NSF grant May 2000, $129,000; declined because of move to Canada.

NSERC Postdoctoral Fellowship, June 1999 to July 2000, $41,000.

Johns Hopkins University Grant for travel support, June 1999 to September 1999, $5700.

Johns Hopkins University Start-up funds, July 1997 to June 1999, $6000.

SELECTED COMPUTATIONAL WORK

Software for working with posets, used to disprove a conjecture in game theory and to compute the number of linear extensions of posets.

Formal verification of many results in homotopy theory in the proof assistant Coq.

Software for computations in modular representation theory (2200 lines of code).

Study of the graviton propagator in loop quantum gravity (dozens of cpu years).

Asymptotics of 10j symbols (many cpu years).

Spin foam models of Riemannian quantum gravity (many cpu months).

Software for Lorentzian quantum gravity calculations (3000 lines of code).

Software for Riemannian quantum gravity calculations (6000 lines of code).

Software for the numerical study of Cayley-Dickson algebras (3400 lines of code).

Patterns in the roots of integer polynomials (featured in Scientific American, December 2009). See `https://jdc.math.uwo.ca/roots`

Extensive computer experience, including formal verification, combinatorial and numerical programming, parallel programming (MPI), symbolic algebra, computer graphics, 3D input and output devices, scientific visualization and linux system administration (including a small Beowulf cluster and a Condor network).

Talks

H-spaces and ∞-loop spaces, Geometry & Topology Seminar, UWO, November 2023.

Manifolds in homotopy type theory, University of Ljubljana, August 2023.

Ext groups in homotopy type theory, HoTT 2023, CMU, May 2023.

An introduction to homotopy type theory, Colloquium, University of Waterloo, March 2023.

No set of spaces detects isomorphisms in the homotopy category, Invited Speaker, Categories and Topology, Mathematical Congress of the Americas, July 2021.

Non-accessible localizations, HoTT/UF 2021, July 2021.

An introduction to using a proof assistant, Northeastern University Math Club, April 2021.

No set of spaces detects isomorphisms in the homotopy category, Algebra seminar, Illinois State University, April 2021.

Reasoning in an ∞-topos with homotopy type theory, Topos Institute Colloquium, April 2021.

Non-accessible reflective subuniverses in HoTT, Carnegie Mellon University, March 2021.

No set of spaces detects isomorphisms in the homotopy category, UWO Topology seminar, January 2021.

The Hurewicz theorem in homotopy type theory, HoTT/UF 2020, July 2020.

The Hopf fibration, UWO seminar, May 2020.

An introduction to homotopy type theory, Colloquium, Kyoto University, March 2020.

A series of three lectures on diffeology, Invited Speaker, Building Up Differentiable Homotopy Theory, Matsumoto University, March 2020.

No set of spaces detects isomorphisms in the homotopy category, CMS Winter Meeting, Toronto, December 2019.

Ask-me-anything, Midwest homotopy type theory seminar, Ann Arbor, MI, October 2019.

Localization in homotopy type theory, HoTT 2019, Carnegie Mellon University, August 2019.

The interaction between homotopy type theory and mathematics, Invited Speaker, MCMP-Western Ontario Workshop on Computation in Scientific Theory and Practice, Munich, June 2019.

Classifying spaces for diffeological groups, Invited Speaker, Souriau 2019, Paris, May 2019.

Factorization homology, two lectures, Factorization Learning Seminar, UWO, April 2019.

Toda brackets and the Adams spectral sequence, Cascade Topology Seminar, University of Oregon, November 2018.

An introduction to homotopy type theory, Colloquium, University of Oregon, November 2018.

Topological data analysis, four lectures, Fields Institute Summer School on TDA and Finance, UWO, July 2018.

An introduction to persistent homology, two lectures, TDA Learning Seminar, UWO, April 2018.

Localization in homotopy type theory, Midwest Homotopy Type Theory Seminar, UWO, May 2018.

Vector fields on spheres, Homotopy Type Theory Seminar, Carnegie Mellon University, April 2018.

An introduction to homotopy type theory, Colloquium, Shantou University, China, November 2017.

Group theory, one-way functions, spam prevention and digital currency, Undergrad Society of Applied Math Pizza Seminar, UWO, October 2016.

The Joyal model structure on simplicial sets, Higher categories learning seminar, UWO, September 2016.

Univalent fibrations in type theory and topology, Colloquium, Wayne State University, April 2016.

Higher Toda brackets and the Adams spectral sequence, Midwest Topology Seminar, Wayne State University, October 2015.

A characterization of univalent fibrations, CT2015, Aveiro, Portugal, June 2015.

Higher inductive types, Homotopy theory seminar, UWO, October 2014.

Models of (homotopy) type theory, Homotopy theory seminar, UWO, June 2014.

An introduction to type theory, Homotopy theory seminar, UWO, May 2014.

The homotopy theory of smooth spaces, Topology Seminar, University of Aberdeen, December 2012. Topology Seminar, University of Copenhagen, May 2013.

Representations of S_k and $U(n)$, Recent Advances in Topological Quantum Field Theories, Lisbon, September 2012.

The homotopy theory of diffeological spaces, Algebra Seminar, IST Lisbon, May 2011. Geometry and Topology Seminar, UWO, November 2011. Topology Seminar, Wayne State University, November 2011.

Computation of traces in the representation theory of the symmetric and unitary groups, Algebra Seminar, UWO, February 2011.

A tour of topology: from counting to curvature via bridges and islands, Florence Bucke public lecture, UWO, March 2010.

Milnor basis for the Steenrod algebra, Steenrod Algebra Seminar, UWO, November 2009.

Categories of smooth spaces, Geometry and Topology Seminar, UWO, February 2009.

An introduction to stable homotopy theory, Stable Homotopy Theory Seminar, UWO, January 2009.

Ghosts in modular representation theory, Colloquium, UWO, November 2007. Topology Seminar, MIT, November 2007. Canadian Mathematical Society annual meeting, London, Ontario, December, 2007.

Computations involving spin networks, spin foams, quantum gravity and lattice gauge theory, Loops '07, Mexico, June 2007. International Loop Quantum Gravity Seminar, October 2007, by conference call to Hamburg, Utrecht, Marseilles, Perimeter Institute, Penn State, Louisiana, Mississippi, Warsaw, etc.

Efficient computation in quantum gravity, Colloquium, Queen's, August 2006.

Homotopy cardinality and Euler characteristic, Algebra seminar, KTH, Stockholm, May 2006. Colloquium, Queen's, August 2006.

Using python for scientific computation, UWO, March 2006.

Homotopy cardinality and Euler characteristic, Colloquium, UWO, Februrary 2006. Colloquium, McMaster, February 2006.

Finiteness and positivity for the Lorentzian partition function. Loops '05, Albert-Einstein-Institute, Potsdam, Germany, October 2005.

Simplicial models of quantum gravity. Topology seminar, University of Chicago, May 2003. Topology seminar, UIUC, May 2003.

From games to numbers and beyond. Graduate School Information Day, Fields Institute, November 2002.

Discrete geometry via representation theory. Cascade Topology Seminar/Pacific Northwest Geometry Seminar, University of Washington, May 2002.

Obstruction theory in model categories. American Mathematical Society meeting, Ann Arbor, March 2002.

Discrete geometry and quantum gravity. Bay Area Topology Seminar, Stanford, February 2002.

Efficient computations in quantum gravity. Quantum gravity seminar, University of California, Riverside, November, 2001.

Spin foams, spin networks and quantum gravity. Invited lecture at Algebraic Topological Methods in Computer Science Conference, Stanford University, July, 2001.

Spin foam models of quantum gravity. Western Ontario, April, 2001. Wayne State University, April, 2001.

Pro-spectra and duality. Ontario Topology Seminar, Western Ontario, October, 2000.

Counterexamples to Brown representability using quivers. Representation theory seminar, Bielefeld, June, 2000. Topology seminar, UIUC, May, 2000.

Relative model structures on categories of chain complexes. JAMI conference on Recent Progress in Homotopy Theory, JHU, March, 2000.

Brown representability in derived categories. Joint algebra and topology seminar, Rutgers, March, 2000. Topology seminar, CUNY, February, 2000. Transpennine Topology Triangle, Sheffield, February, 2000. Topology seminar, MIT, January, 2000. Topology seminar, JHU, December, 1999.

Efficient constructions of spaces and chain complexes. Texas A&M, Waterloo, Sheffield, Western Ontario, Wesleyan, New Mexico State. February, 2000.

Failure of Brown representability in derived categories. Topology seminar, Princeton University, October, 1999.

Phantom Maps. Homotopy theory seminar, Institute for Advanced Study, October, 1999.

Brown representability in derived categories. Arolla Conference on Algebraic Topology, Switzerland, August, 1999.

Efficient constructions of complexes. National University of Singapore, August, 1999.

The ghost-length of projective spaces. National Research Symposium on Algebraic Geometry and Applications, Australian National University, Canberra, Australia, July, 1999.

Model categories and derived categories. Representation Theory seminar, University of California Santa Barbara, July, 1999.

Projective classes in algebra and topology. Topology seminar, Yale University, March, 1999.

Duality and phantom maps. Series of five lectures at Hebrew University, Jerusalem, January, 1999.

Chromatic phantom maps. Canadian Mathematical Society annual meeting, Kingston, Ontario, December, 1998.

Derived categories and projective classes. Algebra seminar, University of Waterloo, August, 1998. Representation Theory seminar, University of Bielefeld, Germany, June, 1998.

Phantom maps: All or nothing. Barcelona Conference on Algebraic Topology, June, 1998. Topology seminar, MIT, March, 1998.

An introduction to stable homotopy theory. Mathematics Department Colloquium, Wesleyan University, May, 1998.

Derived categories and projective classes. American Mathematical Society meeting, Baltimore, Maryland, January, 1998. Canadian Mathematical Society annual meeting, Victoria, British Columbia, December, 1997.

An introduction to stable homotopy theory. Algebra seminar, Waterloo, March, 1997.

Calculating the ghost-length of real projective spaces. Topology seminar, MIT, February, 1997. Topology seminar, Johns Hopkins University, January, 1997.

Phantom maps and a generalized Milnor sequence. American Mathematical Society annual meeting, San Diego, January, 1997.

Ideals in the stable homotopy category: phantoms, ghosts and skeleta. Ontario Topology Seminar, Fields Institute, Toronto, October, 1996. American Mathematical Society meeting, Lawrenceville, New Jersey, October, 1996.

Ideals in the stable homotopy category. Topology seminar, University of Virginia, April, 1996.

Phantom maps and stable homotopy theory. Topology seminar, Wayne State University, Detroit.March, 1996. Fields Institute stable homotopy theory emphasis session, January, 1996. American Mathematical Society meeting, Kent State, Ohio, November, 1995.

Phantom phenomena in triangulated categories. Category Theory Octoberfest, Montreal, October, 1995.

SUPERVISION

Postdoctoral Fellows

Apurva Nakade, August 2019 to August 2021. (Kapulkin co-supervisor.)

Zachery Lindsey, September 2018 to August 2019. (Kapulkin co-supervisor.)

Chris Kapulkin, August 2014 to June 2017.

Fosco Loregian, August 2016 to November 2016.

Martin Frankland, August 2013 to August 2015.

Gaohong Wang, November 2014 to April 2015.

Luke Wolcott, September 2012 to June 2013.

Enxin Wu, September 2012 to December 2012.

Wade Cherrington, May 2009 to April 2011.

Sam Isaacson, July 2009 to June 2010.

Jeff Morton, July 2007 to June 2010.

Sunil Chebolu, June 2005 to June 2008.

Josh Willis, August 2004 to August 2006.

Georg Biedermann, August 2004 to August 2006. (Rick Jardine was chief supervisor).

Eli Hawkins, August 2004 to August 2005.

Boris Chorny, August 2003 to August 2005. (Rick Jardine was chief supervisor).

Kristine Bauer, January 2003 to August 2003.

Oliver Roendigs, July 2002 to June 2003.

Ph.D. Students

Thomas Thorbjørnsen, September 2023 to present, Ph.D. expected 2027.

Chirantan Mukherjee, September 2022 to August 2023. (Transferred to Computer Science.)

Farshid Soltani, January 2021 to present (Vidotto co-supervisor).

Pietropaolo Frisoni, September 2020 to present (Vidotto co-supervisor).

Jarl Flaten, September 2019 to August 2023, Ph.D. 2023.

Luis Scoccola, September 2016 to August 2020, Ph.D. 2020.

James Richardson, September 2015 to December 2019, Ph.D. 2019.

Marco Vergura, September 2015 to July 2019, Ph.D. 2019.

Brandon Doherty, September 2017 to August 2018 (Kapulkin co-supervisor, took over September 2018).

Gaohong Wang, September 2010 to August 2014, Ph.D. 2014.

Enxin Wu, September 2008 to August 2012, Ph.D. 2012.

Wade Cherrington, January 2004 to April 2009, Ph.D. 2009.

Igor Khavkine, September 2004 to October 2008, Ph.D. 2008.

Adkham Abduvaitov, August to December, 2006.

M.Sc. Students

Sebastian Gómez Rendón, September 2023 to present.

Karthik Boyareddygari, September 2021 to April 2022.

Lirong Yang, March 2021 to December 2021, M.Sc. 2021.

Torin Carey, September 2020 to August 2021, M.Sc. 2021.

Siddharth Gurumurthy, September 2020 to August 2021, M.Sc. 2021.

Manak Singh, September 2020 to August 2021, M.Sc. 2021.

Mitchell Riley, September 2015 to August 2016, M.Sc. 2016.

Shiyamalen Thavandiran, September 2015 to August 2016, M.Sc. 2016.

Rui Dong, September 2014 to August 2015, M.Sc. 2015.

Brendon Phillips, September 2014 to August 2015, M.Sc. 2015.

Alex Murray, September 2013 to August 2014, M.Sc. 2014.

Jianing Huang, September 2013 to August 2014. M.Sc. 2014.

Mingcong Zeng, September 2012 to August 2013. M.Sc. 2013.

Brett Bridges, September 2011 to August 2012. M.Sc. 2012.

Banhita Maitra, September 2011 to August 2012. M.Sc. 2012.

Girish Kulkarni, September 2011 to August 2012. M.Sc. 2012.

Baran Serajelahi, September 2010 to August 2011. M.Sc. 2011.

Gaohong Wang, September 2009 to August 2010. M.Sc. 2010.

Wade Cherrington, January 2003 to December 2004. M.Sc. 2004.

Xiaoqing Xie, May 2003 to May 2005. M.Sc. 2004.

Michael de Jong, January 2003 to December 2004. M.Sc. 2004.

Mihai Moise, January 2002 to December 2002. M.Sc. 2002.

Undergraduates

Jacob Ender, NSERC undergraduate research, May to August, 2022.

Amar Venga, WeBWorK development, June to August, 2020.

Ryan Sandford, NSERC undergraduate research, May to August, 2019. Kapulkin was chief supervisor.

Jason Brennan, NSERC undergraduate research, May to August, 2016, and faculty mentor, 2017–2018.

Daniel Satanove, NSERC undergraduate research, May to August, 2015.

Sarah Dawson, Honors Thesis, Physics, 2013–2014.

Arya Fallah, work-study program, September, 2003.

Mike Castellino, work-study program, May to August, 2003.

David Tsang, NSERC undergraduate research, May to August, 2001.

Tom Halford, NSERC undergraduate research, May to August, 2001.

Mark MacDonald, undergraduate research, May to July, 2001.

Amber Loucks, work-study program, January to April, 2001.

High School Students

Mark Tilford, Research Science Institute, MIT, July to August 1995.

Graduate Examinations

Membership on Department of Mathematics Thesis Examining Boards

B. Doherty (Ph.D., 2021).

A. Rolle (Ph.D., 2019).

J. Huang (Ph.D., 2018).

N. Meadows (Ph.D., 2018).

P. Mathey (Ph.D., 2010).

Z. Luo (Ph.D., 2004).

Extra-Departmental Activity at UWO

Anurag Bhattacharjee (M.Sc. Computer Science, 2023). Extra-departmental examiner for Department of Computer Science.

John Lehmann (Ph.D. Philosophy, 2021). Extra-departmental examiner for Department of Philosophy.

Davood Mohajerani (M.Sc. Computer Science, 2015). Extra-departmental examiner for Department of Computer Science.

Hua Meng (M.Sc. Computer Science, 2015). Extradepartmental examiner for Department of Computer Science.

Matthew Teigen (M.F.A. Visual Arts, 2011). University Examiner for Department of Visual Arts.

Junji Jia (Ph.D. Applied Mathematics, 2009). Extradepartmental examiner for Department of Applied Mathematics.

Matt Malenfant (M.Sc. Computer Science, 2007). Extradepartmental examiner for Department of Computer Science.

Laurentin Dragon (Ph.D. Computer Science, 2007). Chairperson of the Oral Examining Board for the Department of Computer Science.

James Marshall (M.Sc. Applied Mathematics, 2007). Extradepartmental examiner for Department of Applied Mathematics.

Xiaoyu Yang (Ph.D. Electrical and Computer Engineering, 2005). Chairperson of the Oral Examining Board for the Department of Electrical and Computer Engineering.

Sergiy Kuzmin (Ph.D. Applied Mathematics, 2002). Extradepartmental examiner for the Department of Applied Mathematics.

External Activity

Yidun Wan (Ph.D. Physics, 2009). External examiner for Department of Physics, University of Waterloo and Perimeter Institute.

Teaching

University of Western Ontario

Summer 2023: M9171, Mathematical Computation (graduate course).

Fall 2022: M2155, Mathematical Structures.

Winter 2022: M4152/9052, Algebraic Topology (cross-listed course).

Fall 2021: M2155, Mathematical Structures.

Summer 2021: M9171, Mathematical Computation (graduate course).

Fall 2020: M2155, Mathematical Structures (mostly online).

Winter 2019: M4152/9052, Algebraic Topology (cross-listed course).

Summer 2018: M9140, Representation Theory (graduate course).

Winter 2018: M4152/9052, Algebraic Topology (cross-listed course).

Summer 2017: M9171, Mathematical Computation (graduate course).

Winter 2017: M4152/9052, Algebraic Topology (cross-listed course), with some students participating by videoconference.

Summer 2016: M9140, Representation Theory (graduate course).

Winter 2016: M4152/9052, Algebraic Topology (cross-listed course), with some students participating by videoconference.

Fall 2014: M1600, Linear Algebra (coordinating).

Summer 2014: M9140, Representation Theory (graduate course).

Winter 2014: M1600, Linear Algebra (coordinating).

Fall 2013: M1600, Linear Algebra (coordinating).
M4152/9052, Algebraic Topology (cross-listed course).

Summer 2012: M9140, Representation Theory (graduate course).

Fall 2011: M4152/9052, Algebraic Topology (cross-listed course).

Winter 2011: M9152, Algebraic Topology II (graduate course).

Fall 2010: M4152/9052, Algebraic Topology (cross-listed course).

Winter 2010: M9140, Representation Theory (graduate course).
Topics in Homotopy Theory (graduate reading course).

Fall 2009: LA1600, Linear Algebra.

Winter 2009: LA1600, Linear Algebra.
Representation Theory (graduate reading course).

Fall 2008: LA1600, Linear Algebra.
M9152, Algebraic Topology II (graduate course).

Winter 2008: M414, Algebraic Topology (cross-listed as a graduate course).

Winter 2007: M562, Representation Theory (graduate course).

Fall 2006: Calc250, Multi-variable Calculus, two sections.

Fall 2004: Calc250, Multi-variable Calculus.

Summer 2004: M546, Homotopy Theory I (graduate course).

Winter 2004: M572, Differential Geometry (graduate course).

Summer 2003: M562, Representation Theory (graduate course).

Fall 2002: M222, Discrete Structures I.

Winter 2002: M223, Discrete Structures II.
M562, Representation Theory (graduate reading course).

Fall 2001: M222, Discrete Structures I, two sections.

Winter 2001: M414, Algebraic Topology.

Fall 2000: M546, Homotopy Theory I (graduate course).

Johns Hopkins University

Winter 1999: Calculus II, two sections.

Fall 1998: Homotopy Theory II (graduate course).

Winter 1998: Linear algebra. Homotopy Theory I.

Fall 1997: Algebraic topology (graduate course).

Massachusetts Institute of Technology

1995–1996: Recitation Instructor for calculus, linear algebra, and a topics course for sophomores.

Teaching Workshops

May 2003: Attended "Spring Perspectives on Teaching" workshop.

Sept 2000: Attended Educational Development Office conference.

Committees were at the University of Western Ontario, unless otherwise stated.

Ongoing

Editor-in-Chief, *Homology, Homotopy and Applications*, since November 2023. Managing Editor, September 2005 to November 2023.

2023–2024 (on sabbatical July–December):

2022–2023:

Graduate Affairs, Promotion and Tenure, Workload, and Data Science Search Committees, Department of Mathematics.

Assistant Graduate Chair, Mathematics.

NSERC CGSM ranking committee, Faculty of Science.

Co-organizer of the HoTTEST Summer School, June to August, 2022, online with over 2000 participants.

Scientific Committee Member, HoTT 2023, CMU, May 2023.

2021–2022:

Annual Performance Evaluation, Appointments, Graduate Affairs and Promotion and Tenure Committees, Department of Mathematics.

Joint Curriculum Committee for Data Science, Faculty of Science.

NSERC CGSM ranking committee, Faculty of Science.

Co-organizer (with Chris Kapulkin) of Homotopy Type Theory Electronic Seminar Talks.

Co-organizer (with Chris Kapulkin) of Research in Teams event, May 2022, UWO.

2020–2021:

Annual Performance Evaluation, Appointments, Graduate Affairs and Workload Committees, Department of Mathematics.

NSERC CGSM ranking committee, Faculty of Science.

Co-organizer (with Chris Kapulkin) of Homotopy Type Theory Electronic Seminar Talks.

2019–2020 (on sabbatical):

Co-organizer (with Chris Kapulkin) of Homotopy Type Theory Electronic Seminar Talks.

Co-organizer (with Chris Kapulkin) of The HoTTEST Conference of 2020, June 15–19, 2020, online.

2018–2019:

Associate Chair, Graduate, Department of Mathematics.

Appointments and Graduate Affairs Committees, Department of Mathematics.

Co-organizer (with Chris Kapulkin) of Homotopy Type Theory Electronic Seminar Talks.

2017–2018:

Associate Chair, Graduate, Department of Mathematics.

Appointments, Graduate Affairs, Promotion and Tenure, and Workload Committees, Department of Mathematics.

Co-organizer (with Chris Kapulkin) of Homotopy Type Theory Electronic Seminar Talks.

2016–2017:

Associate Chair, Graduate, Department of Mathematics.

Appointments, Graduate Affairs, Promotion and Tenure and Chair Selection Committees, Department of Mathematics.

Science of Information Theme Executive Committee, Faculty of Science.

External Awards Committee, Faculty of Science.

NSERC CGSM ranking committee, Faculty of Science.

Co-organizer (with Chris Kapulkin, Dan Licata, Emily Riehl and Mike Shulman) of the AMS Mathematics Research Community on "Homotopy Type Theory," Snowbird, Utah, June 4-10, 2017.

2015–2016:

Associate Chair, Graduate, Department of Mathematics.

Appointments, Graduate Affairs, Promotion and Tenure, and Workload Committees, Department of Mathematics.

Science of Information Theme Executive Committee, Faculty of Science.

External Awards Committee, Faculty of Science.

Co-organizer (with Paul Balmer, Ivo Dell'Ambrogio and Amnon Neeman) of the workshop "Triangulated categories and applications," Banff International Research Station, June 19-24, 2016.

Co-organizer (with Chris Kapulkin and Rick Jardine) of the workshop "Homotopy type theory and univalent foundations," Fields Institute, May 16-20, 2016.

2014–2015:

Associate Chair, Graduate, Department of Mathematics.

Appointments, Graduate Affairs and Promotion and Tenure Committees, Department of Mathematics.

Science of Information Theme Executive Committee, Faculty of Science.

External Awards Committee, Faculty of Science.

2013–2014:

Appointments, Awards, Graduate Affairs and Unit Users Committees, Department of Mathematics.

2012–2013: on sabbatical

2011–2012:

Acting Chair for 1 month, Department of Mathematics.

Associate Chair, Graduate, Department of Mathematics.

Appointments, Awards, Graduate Affairs and Unit Users Committees, Department of Mathematics.

Assisted in search for Associate Dean Graduate, Faculty of Science.

2010–2011:

Acting Chair for 2 weeks, Department of Mathematics.

Associate Chair, Graduate, Department of Mathematics.

Appointments and Graduate Affairs Committees, Department of Mathematics.

Chair Selection Committee for the Department of Mathematics.

Nominating Committee, Faculty of Science.

Co-organizer (with Paul Balmer and Amnon Neeman) of the workshop "Triangulated categories and applications," Banff International Research Station, June 12-17, 2011.

2009–2010:

Appointments, Graduate Affairs, Algebra Seminar and ad hoc Planning Committees in Department of Mathematics.

Chair Selection Committee for the Department of Mathematics.

Nominating Committee (Chair), Fields Institute Committee (until November 2009) and NSERC USRA ranking committee, Faculty of Science.

2008–2009:

Appointments, Graduate Affairs and Promotion and Tenure Committees in Department of Mathematics.

Nominating Committee (Chair), Fields Institute Committee and NSERC USRA ranking committee, Faculty of Science.

2007–2008:

Appointments, Graduate Affairs and Promotion and Tenure Committees in Department of Mathematics.

Interdisciplinary Curriculum Committee, Nominating Committee and Fields Institude Committee, Faculty of Science.

2006–2007:

Co-organizer (with Rick Jardine and Gunnar Carlsson) of the program "Geometric applications of homotopy theory," Fields Institute, January to June, 2007.

Appointments Committee, Promotion and Tenure Committee and Unit Users Committee.

2005–2006 (on sabbatical):

Administration of departmental computing cluster.

2004–2005:

Co-organizer (with Lucho Avramov, Bill Dwyer and Brooke Shipley) of the workshop "Interactions between homotopy theory and algebra", July 26 to August 6, 2004.

Appointments Committee and Unit Users Committee.

Departmental representative for collaborative graduate program in computational science.

Member of the Theoretical Physics Ph.D. program executive committee.

Expansion and administration of departmental Beowulf cluster.

2003–2004:

Co-organizer (with Rick Jardine) of a month-long Fields Institute Program on Applied Homotopy Theory at UWO, September 2003.

Appointments, Graduate Affairs and Awards Committees.

Faculty committees for NSERC USRA's and for Ontario Graduate Scholarship in Science & Technology Competition.

Departmental representative for collaborative graduate program in computational science.

Member of the Theoretical Physics Ph.D. program executive committee.

Expansion and administration of departmental Beowulf cluster.

2002–2003:

Appointments, graduate affairs, awards and colloquium committees.

Departmental representative for collaborative graduate program in computational science.

Purchase, installation and administration of departmental Beowulf cluster.

2001–2002:

Graduate affairs, awards and colloquium committees. Faculty committee for NSERC USRA's.

Co-organizer (with Rick Jardine) of the Ontario Topology Seminar, October 2001.

Organizer of the quantum gravity seminar, Perimeter Institute.

2000–2001:

Faculty committee for NSERC USRA's.

Co-organizer (with Rick Jardine) of the Ontario Topology Seminar, October 2000.

1997–1999, at Johns Hopkins University:

Organizer of topology seminar. Undergraduate advising. Graduate affairs committee. Graduate

admissions. Computer committee. Purchase, installation and administration of departmental computer system.