

CURRICULUM VITAE

PROFESSIONAL ADDRESS:

Department of Mathematical and Statistical Sciences
University of Alberta
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CITIZENSHIP: Canadian

LANGUAGES: French (native), English

EDUCATION

- June 2004 Ph.D. in Mathematics, University of Chicago
Thesis: The representation theory of rational Cherednik algebras
Supervisor: Prof. Victor Ginzburg
- August 1999 M.S. in Mathematics, University of Chicago
- June 1998 B.S. in Mathematics, Université Laval, Québec
- 01/97-05/97 Budapest Semesters in Mathematics Program (Budapest Technical University)

CURRENT POSITION

Associate professor, University of Alberta, July 2014 -

PAST PROFESSIONAL EXPERIENCE

- Assistant professor, University of Alberta, January 2009 - June 2014.
- Seggie Brown Fellow in Algebra, University of Edinburgh, September 2007 - December 2008.
- Postdoctoral researcher at the Université de Versailles-St-Quentin-en-Yvelines supported by the French Ministry of Scientific Research, September 2006 - August 2007.
- J.L. Doob postdoctoral research assistant professor, University of Illinois at Urbana-Champaign, August 2004 - December 2004, January 2006 - May 2006.
- Postdoctoral researcher under the supervision of Prof. Eric Opdam at the University of Amsterdam, January 2005 - December 2005.

RESEARCH INTERESTS

Representation theory of Lie algebras, Yangians and twisted Yangians, quantum algebras and Lie superalgebras.

SCIENTIFIC PUBLICATIONS

- *Evaluation homomorphism for the affine Yangian of type A*, with Vidas Regelskis and Curtis Wendlandt, in preparation.
- *R-matrix presentation of orthogonal and symplectic quantum loop algebras and their representations*, with Vidas Regelskis and Curtis Wendlandt, in preparation.
- *Representations of twisted Yangians of types B, C, D: II*, with Vidas Regelskis and Curtis Wendlandt, to appear in Transformation Groups.
- *Equivalences between three presentations of orthogonal and symplectic Yangians*, with Vidas Regelskis and Curtis Wendlandt, Letters in Mathematical Physics, **109** (2019), no. 2, pp. 327-379.
- *Representations of twisted Yangians of types B, C, D: I*, with Vidas Regelskis and Curtis Wendlandt, Selecta Mathematica, **23** (2017), no.3, pp. 2071-2156.
- *Local Weyl modules and cyclicity of tensor products for Yangians*, with Yilan Tan, Journal of Algebra, **432** (2015), pp. 228-251.
- *Deformed double current algebras of \mathfrak{sl}_2 and \mathfrak{sl}_3* , with Yaping Yang, in preparation.
- *Twisted Yangians of small rank*, with Vidas Regelskis and Curtis Wendlandt, Journal of Mathematical Physics, **57** (2016), no. 4, 041703, 28 pp.
- *Twisted Yangians for symmetric pairs of types B,C,D*, with Vidas Regelskis, Mathematische Zeitschrift, **284** (2016), no.1, pp. 131-166.
- *On deformed double current algebras of simple Lie algebras*, with Yaping Yang, Mathematical Research Letters, **24** (2017), no.5, pp. 1307-1384.
- *From twisted quantum loop algebras to twisted Yangians*, with Patrick Conner, SIGMA Symmetry Integrability Geom. Methods Appl., **11** (2015), 040, 14 pages.
- *Almost cellular algebras*, with Stewart Wilcox, Journal of Pure and Applied Algebra, **219** (2015), no.9, pp. 4105-4116.
- *Quantum Walled Brauer-Clifford superalgebras*, with Georgia Benkart, Ji Hye Jung, Seok-Jin Kang and Stewart Wilcox, Journal of Algebra, **454** (2016), pp. 433-474.
- *Vertex representations for Yangians of Kac-Moody algebras*, with Vidas Regelskis and Curtis Wendlandt, to appear in Journal de l'École polytechnique.
- *Coproduct for Yangians of affine Kac-Moody algebras*, with Hiraku Nakajima and Curtis Wendlandt, Advances in Mathematics, **338** (2018), pp. 865–911.
- *Quantum Lie superalgebras of type P*, with Patrick Conner, Dimitar Grantcharov and Vidas Regelskis, in preparation.
- *Twisted Yangians, twisted quantum loop algebras and affine Hecke algebras of type BC*, with Hongjia Chen and Xiaoguang Ma, Transactions of the American Mathematical Society, **366** (2014), pp. 2517-2574.
- *From quantum loop algebras to Yangians*, with Xiaoguang Ma, Journal of the London Mathematical Society, **86** (2012), no.3, pp. 683-700.
- *Twisted affine Lie superalgebra of type Q and quantization of its enveloping superalgebra*, with Hongjia Chen, Mathematische Zeitschrift, **272** (2012), no.1, pp. 317-347.
- *Central extensions of matrix Lie superalgebras over $\mathbb{Z}/2\mathbb{Z}$ -graded algebras*, with Hongjia Chen, Algebras and Representation Theory, **16** (2013), no.2, pp. 591-604.
- *Quantum algebras and symplectic reflection algebras for wreath products*, Representation Theory, **14** (2010), pp. 148-200.

- *Double affine Lie algebras and finite groups*, with David Hernandez and Sergey Loktev, Pacific Journal of Mathematics, **243** (2009), no.1, pp. 1-41.
- *Quantum algebras and quivers*, Selecta Mathematica, **14** (2009), no.3-4, pp. 667-700.
- *Affine Yangians and deformed double current algebras in type A*, Advances in Mathematics, **211** (2007), no. 2, pp. 436-484.
- *Cherednik algebras and Yangians*, International Mathematics Research Notices, **2005**, no.57, pp. 3551-3593.
- *On the Category \mathcal{O} for Rational Cherednik Algebras*, with V. Ginzburg, E. Opdam and R. Rouquier, Inventiones mathematicae, **154**, no.3 (2003), pp. 617-651.
- *Projective Modules in the Category \mathcal{O} for the Cherednik algebra*, Journal of Pure and Applied Algebra, **182** (2003), pp. 209-221.
- *Embeddings of Symmetric Varieties*, Transformation Groups, volume **6**, no.4 (2001), pp. 333-352.

OTHER PUBLICATIONS

- *Report on the workshop “Twenty-five years of representation theory of quantum groups”* with P. Etingof, V. Ginzburg, D. Hernandez and A. Savage, Banff International Research Station, October 2011.

TEACHING EXPERIENCE

Assistant/associate professor, University of Alberta

- MATH 125 Linear Algebra I, Fall 2018, Winter 2019, Fall 2019.
- MATH 127 Honors Linear Algebra I, Fall 2017.
- MATH 225 Linear Algebra II, Winter 2011, Winter 2015.
- MATH 228 Algebra: Introduction to Ring Theory, Fall 2010, Winter 2012, Fall 2012, Fall 2014.
- MATH 298 Problem Solving Seminar: Fall 2019, Winter 2020
- MATH 325 Algebra: Vector spaces and modules, Winter 2010.
- MATH 326 Rings and modules, Winter 2013, Winter 2014, Winter 2017, Winter 2018, Winter 2019, Winter 2020.
- MATH 328 Introduction to Group Theory, Fall 2011, Fall 2012, Fall 2015.
- MATH 428 Advanced Ring Theory, Winter 2011 (concurrently with MATH 582).
- MATH 497 Reading in Mathematics, Fall 2016, Winter 2017.
- MATH 499 Research Project (as supervisor only), Winter 2013.
- MATH 582 Rings and Modules, Winter 2009, Winter 2011.
- MATH 600 Reading in Mathematics, Winter 2013, Fall 2014, Fall 2018.
- MATH 681 Topics in Algebra (Lie algebras), Fall 2009, Fall 2013.
- MATH 682 Topics in Algebra (Representation theory of Lie algebras), Winter 2017.
- Putnam Mathematical Contest, preparation sessions: Fall 2015, Fall 2016, Fall 2017.
- Algebra Summer School, University of Alberta, August 2017: four lectures on an introduction to representation theory.

- Alberta Summer Mathematics Institute: lectures on problem solving, 2010, 2011, 2012, 2014, 2015.
- PIMS Undergraduate Algebra Summer School, University of Alberta, May 2009: two lectures on Lie groups and Lie algebras.

Postdoctoral instructor, University of Illinois at Urbana-Champaign

- MATH 230 Calculus II, Autumn 2004 and Spring 2006.

Instructor, University of Chicago

- MATH 15100-15300 Calculus I-III, Autumn 2003–Spring 2004.
- MATH 19510-19610 Mathematical Methods in the Social Sciences I & II, Autumn 2002 and Winter 2003.

Teaching assistant, University of Chicago

- MATH 254-255 Basic Algebra I & II, Winter and Spring 2000.
- MATH 270 Complex Analysis, Autumn 1999.

SUPERVISION

- Postdoctoral researchers:
 - July 2011 - May 2013: Stewart Wilcox (PIMS Postdoctoral Fellow and Max Wyman Assistant Professor)
 - September 2010 - August 2012: Xiaoguang Ma (PIMS Postdoctoral Fellow)
 - September 2009 - June 2011: Hongjia Chen
- Ph.D. students: Bryan Kettle (January 2019 -)
 - Peggy Jankovic (September 2016 -)
 - Curtis Wendlandt (May 2015 - July 2019)
 - Yilan Tan (May 2010 - August 2014)
- M.Sc. students: Peggy Jankovic (May 2015 - August 2016)
 - Patrick Conner (May 2013 - August 2014)
- Undergraduate Students:
 - May 2019 - August 2019: Andrew Riesen
 - May 2018 - August 2018: Andrew Riesen
 - May 2017 - August 2017: Paul Budinski, Matthew Burr
 - May 2016 - August 2016: Matthew Burr
 - May 2014 - August 2014: Peggy Jankovic, Curtis Wendlandt
 - May 2013 - August 2013: Michael Beaulieu, Peggy Jankovic
 - May 2012 - August 2012: Patrick Conner, Curtis Wendlandt
 - May 2011 - August 2011: Patrick Conner
 - May 2010 - August 2010: Emily Cliff

GRANTS AND SCHOLARSHIPS

- NSERC Discovery Grant: April 2009 - March 2014, April 2014 - March 2019, April 2019 - present.
- University of Alberta Start-up Grant, January 2009 - December 2012.
- Postdoctoral Fellowship (NSERC), declined in April 2004.
- Sep. 2000 - Aug. 2003: Doctoral Research Scholarship (Fonds FCAR/FQRNT, Government of Quebec).
- Sep. 1998 - Aug. 2000: Master's Research Scholarship (Fonds FCAR, Government of Quebec).
- Oct. 1998 - June 1999: University Fellowship (University of Chicago).
- Sep. 1998 - Aug. 2000: Post-graduate Scholarship A (NSERC), declined.

INVITED TALKS

- Workshop on Representation Theory, Combinatorics and Geometry, University of Virginia, October 19-21, 2018, *Twisted Yangians for symmetric pairs of types B, C and D*.
- Southeastern Lie Theory Workshop X, University of Georgia, June 10-12, 2018, *Twisted Yangians for symmetric pairs of types B, C and D*.
- Northeastern University, Boston, AMS Spring Eastern Section Meeting, session on Hopf Algebras, Tensor Categories, and Homological Algebra, April 21-22, 2018, *Twisted Yangians for symmetric pairs of types B, C and D*.
- University of Ottawa, Conference on Lie Theory and its Interactions with Geometry and Combinatorics, November 11-12, 2017, *Twisted Yangians of types B-C-D and their irreducible finite dimensional representations*.
- Banff International Research Station, Workshop on Vertex Algebras and Quantum Groups, February 7-12, 2016, *Twisted Yangians for symmetric pairs of types B-C-D and their irreducible finite dimensional modules*.
- Georgetown University, Washington DC, AMS Spring Northeastern Section Meeting, session on Quantum Algebras, Representations and Categorifications, March 7-8, 2015, *Twisted Yangians for symmetric pairs of types B-C-D*.
- Research Institute for the Mathematical Sciences, Kyoto, Japan, Representation Theory and related topics, Camp-style seminar, February 16-20, 2015, *Deformed double current algebras associated to complex semisimple Lie algebras*.
- (Cancelled) University of Wisconsin - Eau Claire, AMS Fall Central Section Meeting, session on Lie Algebras and Representation Theory, September 20-21, 2014.
- (Cancelled) University of Ottawa, Winter Meeting of the Canadian Mathematical Society, session on Lie algebras, representations and cohomological invariants, December 6-9, 2013, *Twisted Yangians for symmetric pairs of types B, C, D*.
- University of California at Riverside, AMS Fall Western Section Meeting, session on Geometric and Combinatorial Aspects of Representation Theory, November 2-3, 2013, *Quantum walled Brauer-Clifford superalgebras*.
- Mathematical Congress of the Americas, session on Lie Representation Theory, Guanajuato, Mexico, August 6, 2013, *Quantum walled Brauer-Clifford superalgebras*.

- Fields Institute, Conference on Geometric Methods in Infinite-dimensional Lie theory, March 25, 2013, *Yangians for affine Kac-Moody algebras*.
- Centre de Recherches Mathématiques, Université de Montréal, Workshop on Infinite Dimensional Lie Theory: Algebra, Geometry and Combinatorics, August 23, 2012, *Yangians for Kac-Moody algebras*.
- University of Regina, Summer Meeting of the Canadian Mathematical Society, session on Representation Theory of Groups, Lie Algebras, and Hopf Algebras, June 2, 2012, *Coideal subalgebras of quantized enveloping algebras*.
- University of South Florida, AMS Spring Southeastern Section Meeting, session on Interaction between Algebraic Combinatorics and Representation Theory, March 10, 2012, *Twisted quantum loop algebras and affine Hecke algebras of type BC*.
- University of Texas at Arlington, Algebraic Geometry, Algebra and Number Theory Seminar, September 30, 2011, *Coideal subalgebras of quantized enveloping algebras*.
- University of California at Riverside, Lie Theory Seminar, May 5, 2011, *Twisted affine quantized enveloping superalgebra of type Q*.
- University of Richmond, AMS Fall Southeastern Section Meeting, session on Kac-Moody Algebras, Vertex (Operator) Algebras, and Applications, November 6, 2010, *Twisted affine quantized enveloping superalgebra of type Q*.
- Carleton University, Workshop on Lie Theory, February 26, 2010, *Double affine Hecke, Lie and quantum algebras*.
- University of British Columbia, Second Joint Meeting of the Canadian and Mexican Mathematical Societies, Algebra Session, August 14, 2009, *Representations of double affine Lie algebras*.
- University of Calgary, ABC Algebra Workshop, April 18, 2009, *Representations of double affine Lie algebras*.
- University of Illinois at Urbana-Champaign, AMS Spring Central Section Meeting, March 29, 2009, *Representations of double affine Lie algebras and finite groups*.
- University of British Columbia, Seminar on Algebraic Groups, Galois Cohomology and Related Structures, March 13, 2009, *Double affine quantum algebras*.
- University of California at Riverside, Lie Theory Seminar, February 17, 2009, *Double affine quantum algebras*.
- University of Glasgow, Algebra seminar, May 21, 2008, *Quantum algebras associated to quivers and reflection functors*.
- University of Cambridge, Algebra seminar, May 7, 2008, *Algebras and Lie algebras of double affine type*.
- University of Oxford, Representation Theory seminar, February 28, 2008, *Algebras and Lie algebras of double affine type*.
- University of Connecticut, Colloquium, February 12, 2008, *Double affine Lie theory*.
- Kansas State University, Colloquium, February 7, 2008, *Double affine Lie theory*.
- University of Alberta, Colloquium, February 5, 2008, *Double affine Lie theory*.
- University of Waterloo, Colloquium, February 1, 2008, *Double affine Lie theory*.
- University of Edinburgh, Artin meeting, December 7, 2007, *Double affine Lie algebras*.
- University of Edinburgh, International Workshop on Cherednik Algebras and Related Topics, June 18-22, 2007, *Quantum algebras associated to quivers and symplectic reflection algebras*.

- Centre International de Rencontres Mathématiques, Luminy, France, April 2-7, 2007, *minicourse on rational Cherednik algebras*.
- Université de Paris VII, Séminaire d'algèbre, March 19, 2007, *Quivers and double affine algebras*.
- Université de Paris VII, Séminaire Algèbres enveloppantes, February 23, 2007, *Double affine quantum algebras*.
- École Polytechnique (France), February 6, 2007, *Symplectic reflection algebras and quantum algebras*.
- MIT, Infinite Dimensional Algebra seminar, April 28, 2006, *Cherednik algebras and quantum algebras*.
- Université de Paris VII, Séminaire Algèbres enveloppantes, May 27, 2005, *Cherednik algebras and Yangians*.
- University of Amsterdam, Lie Day, May 23, 2005, *Rational Cherednik algebras*.
- Université de Sherbrooke, Algebra seminar, May 6, 2005, *Category \mathcal{O} for rational Cherednik algebras*.
- University of Ottawa, Algebra Seminar, May 4, 2005, *Variations on a theme of Schur and Weyl*.
- University of Ottawa - Carleton University, Algebra Day, October 2, 2004, *Rational Cherednik algebras*.
- University of Illinois at Urbana-Champaign, Representation theory seminar, January 21, 2004, *Category \mathcal{O} for rational Cherednik algebras*.
- University of Waterloo, Colloquium, January 12, 2004, *Rational Cherednik algebras*.
- Cornell University, Lie Theory Seminar, November 21, 2003, *Category \mathcal{O} for rational Cherednik algebras*.
- University of Wisconsin-Madison, Lie Theory Seminar, November 4, 2003, *Category \mathcal{O} for rational Cherednik algebras*.
- Université Laval, Séminaire d'analyse, February 1998, *Valence des polynômes harmoniques*.

OTHER TALKS

- Field Station, Kananaskis, Algebra Meeting, February 23, 2011, *Generalizations of Lie algebras*.
- University of Alberta, Algebra Seminar, February 11, 2009, *Double affine quantum algebras and their representations*.
- University of Edinburgh, Algebra seminar, December 8, 2008, *Representations of double affine Lie algebras*.
- University of Edinburgh, Algebra seminar, October 16, 2007, *Algebras and Lie algebras of double affine type*.
- Université de Versailles-St-Quentin-en-Yvelines (France), December 19, 2006, *Algèbres de réflexions symplectiques*.
- University of Illinois at Urbana-Champaign, Representation theory seminar, March 2006, *Affine Yangians and deformed double current algebras I,II,III*.
- University of Amsterdam, Mathematics Colloquium, May 11, 2005, *Variations on a theme of Schur and Weyl*.

ORGANIZATION OF EVENTS

- Local organizer for the Putnam Mathematical Competition, 2015 - present.
- Western Summer School in Algebra, University of Alberta, August 13-17, 2018 and August 12-16, 2019.
- Conference “Interactions between Representation Theory and Algebraic Geometry”, University of Chicago, August 21-25, 2017.
- Session on Representation Theory at the 2016 CMS Summer Meeting, Edmonton, Alberta, June 24-27, 2016.
- Workshop “Twenty-five years of representation theory of quantum groups”, BIRS, Banff, Canada, August 7-12, 2011.
- Session on Lie Theory at the 2011 CMS Summer Meeting, University of Alberta, June 3-5.
- Session on Lie Algebras and Representation Theory at the 2009 CMS Winter Meeting, University of Windsor, December 5-7.

OTHER CONFERENCES ATTENDED AND VISITS

- Joint National AMS-MAA meeting, San Francisco, January 15-16, 2010.
- Combinatorial and Geometric Structures in Representation Theory, LMS Symposium, University of Durham, July 6-12, 2009.
- Conference in Geometric Representation Theory and Extended Affine Lie Algebras, Fields Institute, University of Ottawa, June 29 - July 3, 2009.
- Artin meeting, University of Aberdeen, September 26-27, 2008.
- Artin meeting, University of Glasgow, May 30-31, 2008.
- LieGrits Workshop on Cluster algebras and categorification, University of Oxford, January 3-9, 2008.
- Algebraic Groups Workshop, Mathematisches Forschungsinstitut Oberwolfach, April 22-27, 2007.
- Conference on Affine and Double Affine Hecke Algebras, Centre International de Rencontres Mathématiques, Luminy, France, June 2006.
- Infinite-Dimensional Aspects of Representation Theory and Applications, University of Virginia, May 2004.
- Workshop on algebraic transformation groups, Centre de Recherches Mathématiques, Université de Montréal, Canada, June 2002.
- First Joint Mathematical International Meeting AMS-SMF, École Normale Supérieure de Lyon, France, July 2001.
- Visitor, Institut des Hautes Études Scientifiques, Bures-sur-Yvette, France, July 2001.

SERVICE TO THE SCIENTIFIC COMMUNITY

- Referee for *Advances in Mathematics*, *Advances in Theoretical and Mathematical Physics*, *Algebras and Representation Theory*, *Bulletin and Journal of the London Mathematical Society*, *Communications in Algebra*, *Communications in Mathematical Physics*, *International Mathematics Research Notices*, *Journal of Algebra*, *Journal of*

Pure and Applied Algebra, Mathematical Research Letters, Mathematische Zeitschrift, Memoirs of the American Mathematical Society, Pacific Journal of Mathematics, Selecta Mathematica, Transformation Groups.

- Reviewer for Mathematical Reviews.
- Referee for EPSRC.
- Referee for NSERC.
- Member of the Doctoral Prize Selection Committee of the Canadian Mathematical Society (2016 - 2019).

PROFESSIONAL AFFILIATION

- Member of the Canadian Mathematical Society.