

Curriculum Vitae

STEPHEN GRIFFETH

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Citizenship: US

Date of CV: June 2019

Employment

2020 – Professor, Universidad de Talca

2011 – 2019 Associate Professor, Universidad de Talca

2013 – 2014 Research associate, University of Melbourne

2009 – 2011 EPSRC postdoc, University of Edinburgh

2006 – 2009 Visiting Assistant Professor, University of Minnesota

Education

2006 Ph.D., University of Wisconsin–Madison, directed by Arun Ram. Dissertation: “Rational Cherednik algebras and coinvariant rings”

2000 B.A. magna cum laude, with distinction in Mathematics from Carleton College

Research interests

Representation theory, combinatorics, and geometry

Publications

Peer-reviewed journal articles

1. *Unitary representations of the Cherednik algebra: V^* homology* (with S. Fishel and E. Manosalva), to appear in *Mathematische Zeitschrift*, arXiv:2008.04412
2. *Subspace arrangements and Cherednik algebras*, to appear in *International Mathematics Research Notices*, arXiv:1905.08713
3. *W -exponentials, Schur elements, and the support of the spherical representation of the rational Cherednik algebra* (with Daniel Juteau), *Annales scientifique de l'École normale supérieure*, (4) 53 (2020), no. 5, 1335–1362, arXiv:1707.08196
4. *Unitary representations of cyclotomic rational Cherednik algebras*, *Journal of Algebra* (2018), Vol. 512, 310–356
5. *Parabolic degeneration of rational Cherednik algebras* (with A. Gusenbauer, D. Juteau, and M. Lanini), *Selecta Math* (2017), Vol. 23, Issue 4, 2705–2754
6. *Character formulas and Bernstein-Gelfand-Gelfand resolutions for Cherednik algebra modules*, (with E. Norton), *Proceedings of the London Mathematical Society* (2016), Vol. 113, Issue 6, 868–906
7. *Systems of parameters and holonomicity of A -hypergeometric systems* (with C. Berkesch and E. Miller), *Pacific Journal of Math* (2015), Vol. 276, No. 2, 281–286

8. *Jack polynomials as fractional quantum Hall states and the Betti numbers of the $(k + 1)$ -equals ideal* (with C. Berkesch and S. Sam), arXiv:1303.4126, Communications in Mathematical Physics, 330 (2014), no. 1, 415–434
9. *Macdonald polynomials as characters of Cherednik algebra modules*, arXiv:1205.0593, Math. Zeitschrift, 277 (2014), no. 1-2, 317–323
10. Appendix to *Supports of irreducible spherical representations of rational Cherednik algebras of finite Coxeter groups* (by Pavel Etingof), Advances in Mathematics, vol. 229, issue 3, 2012, arXiv:0911.3208
11. *Cell modules and canonical basic sets for Hecke algebras from Cherednik algebras* (with Maria Chlouveraki and Iain Gordon), Contemporary Mathematics, vol. 562, New Trends in Noncommutative algebra, 2012, arXiv:1104.4070
12. *Catalan numbers for complex reflection groups* (with Iain Gordon), American Journal of Mathematics, vol. 134, no. 6, 2012, arXiv:0912.1578
13. *Positivity and Kleiman transversality in equivariant K -theory of homogeneous spaces* (with Ezra Miller and Dave Anderson), Journal of the European Mathematical Society, vol. 13, issue 1, 2011, arXiv:0808.2785
14. *Generalized Jack polynomials and the representation theory of rational Cherednik algebras* (with Charles Dunkl), Selecta Mathematica, vol. 16, issue 4, 2010, arXiv:1002.4607
15. *Orthogonal functions generalizing Jack polynomials*, Transactions of the American Mathematical Society, vol. 362, 2010, arxiv:0707.0251
16. *Towards a combinatorial representation theory for the rational Cherednik algebra of type $G(r, p, n)$* , Proceedings of the Edinburgh Mathematical Society (Series 2), vol. 53, issue 02, 2010, arXiv:math/0612733
17. Appendix to *Unitary representations of rational Cherednik algebras* (by Pavel Etingof and Emanuel Stoica) Representation Theory 13 (2009), 349–370
18. *Jack polynomials and the coinvariant ring of $G(r, p, n)$* , Proceedings of the American Mathematical Society 137 (2009), no. 5, 1621–1629 arXiv:0806.3292
19. *Affine Hecke algebras and the Schubert calculus* (with Arun Ram), European J. Combin. 25 (2004), no. 8, 1263–1283

Preprints

20. *Representation-valued Dunkl exponential functions*, in preparation

Visiting positions

August 2013—January 2014 University of Melbourne research associate

January—March 2016 International Centre for Theoretical Physics, Trieste, visiting professor

Grant support

2019- Fondecyt Proyecto Regular 1190597 (as PI)

2015-2019 Fondecyt Proyecto Regular 1151275 (as PI)

2011-2015 Fondecyt Proyecto Regular 1110072 (as PI)

2009-2011 Postdoc at University of Edinburgh supported by EPSRC Grant EP/G007632 (PI Iain Gordon)

2006-2009 Postdoc at University of Minnesota supported by NSF Grant DMS-0449102 (PI Ezra Miller)

2001-2003 VIGRE graduate fellowship at University of Wisconsin, Madison.

Advising

PhD students mentored

March 2015—present Elizabeth Manosalva, doctoral thesis, *Characters of unitary representations of rational Cherednik algebras*

March 2012—March 2018 Armin Gusenbauer, doctoral thesis, *Singular polynomials for the rational Cherednik algebra of type $G(r, 1, 2)$*

Masters students mentored

March 2020—present Carlos Ajila, masters thesis, *Diagonalizable and unitary representations of cyclotomic rational Cherednik algebras*

March 2018—2019 Alex Centeno, masters thesis, *Grothendieck's six functors formalism*

March 2014—March 2015 Elizabeth Manosalva, masters thesis, *Asymptotic characters of the symmetric group*

Undergraduate students mentored

Fall 2007 Moua Neng, senior thesis on implementation of RSA encryption.

Fall 2008 Troy Billings, senior thesis on implementation of elliptic curve cryptography

Selected presentations

2021 March Algebra and representation theory seminar Tor Vergata, “Subspace arrangements and the representation theory of rational Cherednik algebras”

2021 January University of Davis algebra and discrete mathematics seminar, “Special parameters for rational Cherednik algebras”

2020 October University of Oxford algebra seminar, “Subspace arrangements and the representation theory of rational Cherednik algebras”

2019 December Casa Matemática Oaxaca conference on algebraic and geometric categorification, “Harish-Chandra series for rational Cherednik algebras”

2019 October ICTP-SAIFR workshop on quantum symmetries, “Structure and character formulas for unitary representations of Cherednik algebras”

- 2018 April Seminario Aritmética y Geometría en Valparaiso, “Introduction to finite Hecke algebras and Schur elements” and “Harish-Chandra series for rational Cherednik algebras”
- 2018 March Encuentro SOMACHI, “Unitary representations and commutative algebra”
- 2017 June University of Montreal, introductory short course: “Cherednik algebras and algebraic combinatorics”
- 2017 April Rutgers University, “The support of the spherical representation of the rational Cherednik algebra of a complex reflection group”
- 2017 January Università degli Studi di Padova “Finite dimensionality of the spherical irreducible modules for the rational Cherednik algebra”
- 2017 January ICTP Trieste, “The support of the spherical representation of the rational Cherednik algebra of a complex reflection group”
- 2016 August Universität Paderborn, Dunkl operators, special functions and harmonic analysis, “Unitary representations of Cherednik algebras”
- 2016 January Simons Center, Geometric Representation Theory *BGG resolutions for rational Cherednik algebras*
- 2015 May Universidad de Chile, Facultad de Ciencias “Modular representation theory”
- 2015 April Pontificia Universidad Católica de Chile, Facultad de Matemáticas “Catalan combinatorics, algebraic geometry, and representation theory”
- 2015 January Université Paris Diderot “Eigenvalues of monodromy for parabolic restrictions of Cherednik algebra modules”
- 2014 December XX Coloquio Latinoamericano de Álgebra, Lima “Finite dimensional representations of rational Cherednik algebras”
- 2014 November 4th Latin American Conference on Lie Groups and Geometry, Petrolina Brazil, “Unitary representations and commutative algebra”
- 2013 September University of Melbourne
“Orthogonal polynomials, algebraic combinatorics, and Cherednik algebras”
- 2013 August Guanajuato, Mexico, Mathematical Congress of the Americas
“Macdonald polynomials as characters of rational Cherednik algebra modules”
“Vanishing properties of Jack polynomials”
- 2013 June Shanghai, China, PRIMA special session on representation theory and categorification
“Vanishing properties of Jack polynomials”
- 2012 December CIRM, Luminy
“Cherednik algebras and algebraic combinatorics”
- 2011 October University of North Carolina
“Unitary representations of rational Cherednik algebras”
- 2011 October AMS sectional meeting at Wake Forest
“Unitary representations of rational Cherednik algebras”
- 2011 January University of Nagoya
“Specht-valued Jack polynomials and representations of rational Cherednik algebras”
- 2011 January University of Nagoya
“Introduction to symplectic reflection algebras”
- 2010 October Universidad de Talca colloquium
“Representation theory of rational Cherednik algebras”
- 2010 May MIT double affine Hecke algebras and algebraic geometry workshop
“Generalized Jack polynomials and the representation theory of rational Cherednik algebras”
- 2010 April AMS sectional meeting, St. Paul
“Catalan numbers for complex reflection groups”

- 2010 April University of Texas, Denton colloquium
 “Representation theory of rational Cherednik algebras”
- 2010 April University of Texas, Denton algebra seminar
 “Positivity and Kleiman transversality in equivariant K-theory of homogeneous spaces”
- 2010 April AMS sectional meeting, St. Paul
 “Catalan numbers for complex reflection groups”
- 2010 February University of Glasgow algebra seminar
 “Unitary representations of rational Cherednik algebras”
- 2009 April MIT noncommutative algebra seminar
 “Tableau models for representations of rational Cherednik algebras”
- 2009 March University of Michigan combinatorics seminar
 “Unitary representations of rational Cherednik algebras”
- 2009 March Mathematisches Forschungsinstitut Oberwolfach
 “Diagonalizable and unitary representations of rational Cherednik algebras”
- 2009 February University of Illinois algebra, geometry and combinatorics seminar
 “Three problems in the representation theory of rational Cherednik algebras”
- 2008 September University of Virginia algebra seminar
 “The submodule structure of standard modules for the rational Cherednik algebra”
- 2008 September University of Virginia topology seminar
 “Positivity in equivariant K-theory of generalized flag varieties”
- 2008 June University of California, Berkeley
 Conference on geometric and combinatorial representation theory
 “The submodule structure of standard modules for the rational Cherednik algebra ”
- 2008 March AMS sectional meeting
 Baton Rouge, LA
 Special session on geometric and combinatorial representation theory
 “The submodule structure of standard modules for the rational Cherednik algebra ”
- 2008 February University of Minnesota combinatorics seminar
 “A combinatorial model for representations of rational Cherednik algebras”
- 2007 January University of California–Riverside representation theory seminar
 “Finite dimensional modules for rational Cherednik algebras”
- 2006 September University of Minnesota combinatorics seminar
 “Rational Cherednik algebras and descent bases for coinvariant rings”
- 2005 April University of Wisconsin Combinatorics seminar
 “Double affine Hecke algebras and orthogonal polynomials.”
- 2005 February University of Wisconsin Lie theory seminar
 “An introduction to algebraic groups and homogeneous spaces.”
- 2004 February University of Wisconsin Combinatorics seminar
 “Schubert calculus, Hecke algebras, and the Yang-Baxter equation”
- 2003 April University of Wisconsin group theory seminar
 “Matrix groups have large abelian subgroups”
- 2003 March University of Wisconsin Lie Theory seminar
 “A positivity conjecture for the T-equivariant K-Theory of flag varieties.”
- 2002 October University of Wisconsin Combinatorics seminar
 “Alternating sign matrices and the K -theory of flag varieties”

Conferences organized

Rational Catalan combinatorics, December 2012.

Representation theory days in Patagonia, January 2014.

Álgebras de Hopf y teoría de representaciones (sesión temática de SUMA) 2016

Teaching (at U. Talca)

Undergraduate teaching

2014 (Year-long course) Matemática I, Ingeniería Comercial

2014 (Year-long course) Matemática, Auditoría

2015 Álgebra, Bioinformática

2016 Álgebra, Agronomía

2016 Introducción a la matemática, Plan Común Ingenierías

2016 Ecuaciones diferenciales, Bioinformática

2019 Álgebra, Agronomía

Graduate teaching

2011 Algebraic geometry I and II

2011 Lie theory

2012 Algebra graduate sequence I, II and III

2013 Algebra graduate sequence I and II

2015 Algebraic Geometry I and II

2015 Complementos de álgebra: Galois theory

2017 and 2018 Topology graduate sequence I, II and III

2011-2019 Various reading and complementary courses (e.g., Representation theory, Cherednik algebras, derived categories and categorification, quasi-invariants)

Committee service at U. Talca

2014-present Doctoral program committee

2018-present IMAFI promotions committee

2019 Hiring committee