

**Jonathan Brundan****Curriculum Vitae**

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**Date of birth** 12/12/1970.  
**Nationality** British. US permanent resident.  
**Status** Married (with 11 year old Joseph and 8 year old Aisha!).

**CAREER HISTORY**

**Current Position** Professor, University of Oregon, from Fall 2008.  
 Associate Professor, University of Oregon, 2002–2008.  
 Assistant Professor, University of Oregon, 1997–2002.

**Sabbaticals** January 2011, Hausdorff Institute, Bonn, Germany.  
 March 2011–June 2011, University of Sydney, Australia.  
 September 2003–February 2004, University of Bristol, UK.  
 March 2004–May 2004, University of Lyon I, France.

**Research fellowship** Trevelyan Research Fellow, Selwyn College,  
 Cambridge University, 1996–1997.

**Ph.D. in mathematics** Imperial College of Science, Technology and Medicine,  
 University of London, 1993–1996 (advisor: Martin Liebeck).

**P.G.C.E.** British teaching qualification, 11–18 year olds.  
 Dept. of Education, Cambridge, 1992–1993.

**BA (Hons) First Class** Mathematics. Queens' College, Cambridge, 1989–1992.

**Systems programmer** One year of C programming, 1988–1989.  
 Intelligent Micro Software Ltd., UK.

**RESEARCH INTERESTS**

1. Representation theory of Lie algebras, algebraic groups and quantum groups.
2. Algebraic combinatorics, Kazhdan-Lusztig polynomials and crystal bases.
3. Modular representation theory of finite groups, invariant theory.

## GRANTS AND AWARDS

1. NSF five year award 2007–2012, \$490,734 (PI, co-PI Kleshchev).
2. Selected as first alternate for 2007-2008 American Mathematical Society Centennial Fellowship (not awarded).
3. Ersted award, prestigious University of Oregon prize for outstanding teaching, June 2003.
4. Williams award, University of Oregon prize for excellence in teaching, May 2003.
5. NSF five year award 2002–2007, \$357,000 (co-PI, PI Kleshchev).
6. University of Oregon Bray award, university-wide prize for outstanding junior faculty, June 2000.
7. NSF standard award 1998–2001, \$67,000 (PI).

## PHD STUDENTS

1. Samson Black, Fall 2009–Spring 2010 (co-chair during sabbatical leave of primary advisor, Arkady Vaintrob). Thesis: “Representations of Hecke algebras and the Alexander polynomial”.
2. James Urick, Fall 2007–Fall 2010. Did not finish.
3. Jonathan Brown, from Fall 2004–Spring 2009. Thesis: “Finite  $W$ -algebras of classical type”. Currently has a postdoctoral position at Birmingham University, UK.
4. Aaron Tresham, Winter 2001–Fall 2002. Did not finish.
5. Jon Kujawa, Winter 1999–Summer 2003. Currently has a tenure-track position at University of Oklahoma, Norman.

## MANUSCRIPTS SUBMITTED FOR PUBLICATION

1. *Gradings on walled Brauer algebras and Khovanov’s arc algebra*, 70 pages (with C. Stroppel).

## PUBLICATIONS

2. *Mœglin’s theorem and Goldie rank polynomials in Cartan type A*, 30 pages, to appear in *Compositio Math.*.
3. *An orthogonal form for level two Hecke algebras with applications*, 25 pages, to appear in *Contemp. Math.*.

4. *Cohomology of Spaltenstein varieties*, 30 pages, to appear in *Transform. Groups* (with V. Ostrik).
5. *Highest weight categories arising from Khovanov's diagram algebra IV: the general linear supergroup*, 44 pages, to appear in *J. Eur. Math. Soc.* (with C. Stroppel).
6. *Highest weight categories arising from Khovanov's diagram algebra III: category  $\mathcal{O}$* , 77 pages, to appear in *Represent. Theory* (with C. Stroppel).
7. *Highest weight categories arising from Khovanov's diagram algebra I: cellularity*, 37 pages, to appear in *Moscow Math. J.* (with C. Stroppel).
8. *Graded Specht modules*, to appear in *J. Reine Angew. Math.*, 23 pages (with A. Kleshchev and W. Wang).
9. Book review of "Finite Dimensional Algebras and Quantum Groups" by B. Deng, J. Du, B. Parshall and J.-P. Wang, *Bull. Amer. Math. Soc.* **48** (2011), 107–114.
10. *Highest weight categories arising from Khovanov's diagram algebra II: Koszulity*, *Transform. Groups* **15** (2010), 1–45 (with C. Stroppel).
11. *The degenerate analogue of Ariki's categorification theorem*, *Math. Z.* **226** (2010), 877–919 (with A. Kleshchev).
12. Book review of "Yangians and Classical Lie Algebras" by A. Molev, *Bull. Amer. Math. Soc.* **47** (2010), 561–566.
13. *Blocks of cyclotomic Hecke algebras and Khovanov-Lauda algebras*, *Invent. Math.* **178** (2009), 451–484 (with A. Kleshchev).
14. *Graded decomposition numbers for cyclotomic Hecke algebras*, *Advances Math.* **222** (2009), 1883–1942 (with A. Kleshchev).
15. *Elementary invariants for centralizers of nilpotent matrices*, *J. Austral. Math. Soc.* **86** (2009), 1–15 (with J. Brown).
16. *Highest weight theory for finite  $W$ -algebras*, *Int. Math. Res. Notices* **11** (2008), 53pp. (with S. Goodwin and A. Kleshchev).
17. *Centers of degenerate cyclotomic Hecke algebras and parabolic category  $\mathcal{O}$* , *Represent. Theory* **12** (2008), 236–259.
18. *Schur-Weyl duality for higher levels*, *Selecta Math.* **14** (2008), 1–57 (with A. Kleshchev).
19. *Symmetric functions, parabolic category  $\mathcal{O}$  and the Springer fiber*, *Duke Math. J.* **143** (2008), 41–79.

20. *Representations of shifted Yangians and finite  $W$ -algebras*, Mem. Amer. Math. Soc. **196** (2008), 115 pages (with A. Kleshchev).
21. *Good grading polytopes*, Proc. London Math. Soc. **94** (2007), 155–180 (with S. Goodwin).
22. *James' regularization theorem for projective representations of symmetric groups*, J. Algebra **306** (2006), 128–137 (with A. Kleshchev).
23. *Dual canonical bases and Kazhdan-Lusztig polynomials*, J. Algebra **306** (2006), 17–46.
24. *Modular representations of the supergroup  $Q(n)$ , II*, Pacific J. Math. **224** (2006), 65–90.
25. *Shifted Yangians and finite  $W$ -algebras*, Advances Math. **200** (2006), 136–195 (with A. Kleshchev).
26. *Parabolic presentations of the Yangian  $Y(\mathfrak{gl}_n)$* , Commun. Math. Phys. **254** (2005), 191–220 (with A. Kleshchev).
27. *Tilting modules for Lie superalgebras*, Commun. Algebra **32** (2004), 2251–2268.
28. *Kazhdan-Lusztig polynomials and character formulae for the Lie superalgebra  $\mathfrak{q}(n)$* , Advances Math. **182** (2004), 28–77.
29. *Kazhdan-Lusztig polynomials and character formulae for the Lie superalgebra  $\mathfrak{gl}(m|n)$* , J. Amer. Math. Soc. **16** (2003), 185–231. This article has received a **featured review** in Mathematical Reviews.
30. *A new proof of the Mullineux conjecture*, J. Algebraic Combin. **18** (2003), 13–39 (with J. Kujawa).
31. *Representations of symmetric groups and their double covers*, in: ‘Groups, combinatorics and geometry (Durham, 2001)’, pp. 31–53, World Sci. Publishing, 2003 (with A. Kleshchev).
32. *Modular representations of the supergroup  $Q(n)$ , I*, J. Algebra **260** (2003), 64–98 (with A. Kleshchev).
33. *Cartan determinants and Shapovalov forms*, Math. Ann. **324** (2002), 431–449 (with A. Kleshchev).
34. *Projective representations of symmetric groups via Sergeev duality*, Math. Z. **239** (2002), 27–68 (with A. Kleshchev).
35. *Hecke-Clifford superalgebras, crystals of type  $A_{2\ell}^{(2)}$  and modular branching rules for  $\widehat{\mathfrak{S}}_n$* , Represent. Theory **5** (2001), 317–403 (with A. Kleshchev).

36. *Unipotent Brauer character values of  $GL_n(q)$  and the forgotten basis of the Hall algebra*, J. Algebraic Combin. **13** (2001), 137–149.
37. *Representations of the symmetric group which are irreducible over subgroups*, J. reine angew. Math. **530** (2001), 145–190 (with A. Kleshchev).
38. *Quantum linear groups and representations of  $GL_n(q)$* , Mem. Amer. Math. Soc. **149** (2001), no. 706, 112 pp. (with R. Dipper and A. Kleshchev).
39. *Tensor products and restrictions in type A*, in: ‘Modular representation theory of finite groups’, eds. M. Collins, B. Parshall and L. Scott, de Gruyter, 2001, pp. 67–99 (with A. Kleshchev).
40. *Lower bounds for degrees of irreducible Brauer characters of finite general linear groups*, J. Algebra **223** (2000), 615–629 (with A. Kleshchev).
41. *On translation functors for general linear and symmetric groups*, Proc. London Math. Soc. **80** (2000), 75–106 (with A. Kleshchev).
42. *Double coset density in classical algebraic groups*, Trans. Amer. Math. Soc. **352** (2000), 1405–1436.
43. *Some remarks on branching rules and tensor products for algebraic groups*, J. Algebra **217** (1999), 335–351 (with A. Kleshchev).
44. *Modular Littlewood-Richardson coefficients*, Math. Z. **232** (1999), 287–320 (with A. Kleshchev).
45. *Dense orbits and double cosets*, NATO Adv. Sci. Inst. Ser. C Math. Phys. Sci. **517** (1998), 259–274.
46. *Semisimple restrictions from  $GL(n)$  to  $GL(n - 1)$* , J. reine angew. Math. **500** (1998), 83–112 (with A. Kleshchev and I. Suprunenko).
47. *Modular branching rules and the Mullineux map for Hecke algebras of type  $\mathbf{A}$* , Proc. London Math. Soc. **77** (1998), 551–581.
48. *Lowering operators for  $GL(n)$  and quantum  $GL(n)$* , Proc. Symposia in Pure Math. **63** (1998), 95–114.
49. *Double coset density in exceptional algebraic groups*, J. London Math. Soc. **58** (1998), 63–83.
50. *Multiplicity-free subgroups of reductive algebraic groups*, J. Algebra **188** (1997), 310–330.
51. *Double coset density in reductive algebraic groups*, J. Algebra **177** (1995), 755–767.

## INVITED LECTURES, CONFERENCES AND WORKSHOPS

1. Invited speaker at “Algebraic Lie theory,” Isaac Newton Institute, Cambridge, UK (September 12–September 16 2011).
2. “Twenty-five years of representation theory of quantum groups,” BIRS, Canada (August 7-12 2011).
3. Algebra/topology seminar, University of Melbourne, Australia (May 24 2011).
4. Pure colloquium, University of New South Wales, Australia (May 19 2011).
5. Series of four lectures on “Finite  $W$ -algebras and primitive ideals,” University of Sydney, Australia (May 2011).
6. Algebra seminar, University of Sydney, Australia (April 29 2011).
7. Series of three lectures at Winter School for “On the Interaction of Representation Theory with Geometry and Combinatorics” programme, Hausdorff Institute for Mathematics, Bonn, Germany (January 2011).
8. Invited speaker at “Southwestern group theory day,” University of Arizona, Tucson (November 13 2010).
9. Invited speaker at “Representation theory of algebraic and quantum groups,” Nagoya, Japan (August 2-6 2010).
10. Main speaker at Lie theory workshop, Fields Institute/Carleton University, Ottawa (February 26-28 2010).
11. Speaker at California Lie theory seminar at Berkeley, VA (December 12 2009).
12. Invited speaker at “Representation theory and Lie theory” conference, Isaac Newton Institute, Cambridge, UK (June 22-26 2009).
13. Seminaire algèbres enveloppantes, University of Paris VII (May 22 2009).
14. Colloquium, Warwick University, UK (May 15 2009).
15. Algebra seminar, Cambridge University, UK (May 6 2009).
16. Invited speaker at “Categorification and geometrization from representation theory,” University of Glasgow, UK (April 13-17 2009).
17. Invited speaker at “Algebraic Lie structures with origins in physics,” Isaac Newton Institute, Cambridge, UK (March 23-27 2009).
18. Visiting fellow at “Algebraic Lie theory” program at Isaac Newton Institute, Cambridge, UK (Spring 2009).

19. Algebra seminar, University of Virginia, Charlottesville, VA (December 10 2008).
20. Representation theory, geometry and combinatorics seminar, Berkeley, CA (December 8 2008).
21. Invited speaker at FPSAC (Formal Power Series and Algebraic Combinatorics), Valparaiso, Chile (June 23-27 2008).
22. Invited participant at “Combinatorial representation theory” and “Representations of finite groups” programs at MSRI, Berkeley (Spring 2008).
23. Series of two introductory lectures at “Representations of finite groups workshop,” MSRI, Berkeley, (January 28-31 2008).
24. Invited speaker “Algebraic aspects of Lie theory,” Academia Sinica, Taipei, Taiwan (December 20-23 2007).
25. Speaker at ICRT-IV, Lhasa, China (July 16-20 2007).
26. Speaker at “Algebraic and geometric Lie theory,” Aarhus, Denmark (June 25-30 2007).
27. Speaker at “Algebraic Lie theory,” BIRS, Canada (May 27–June 1 2007).
28. Series of eight lectures at Tsinghua University, Beijing, China (May 2007).
29. Colloquium talk on “Spaltenstein varieties and category  $\mathcal{O}$ ” at University of Washington, WA (April 10 2007).
30. Speaker at “Categorification in algebra and topology,” Uppsala, Sweden (September 7-11 2006).
31. Speaker at workshop on “Representation theory and geometry,” UC Berkeley, CA (May 2–5 2006).
32. Colloquium talk on “Schur-Weyl duality for higher levels” at UC Santa Barbara, CA (May 1 2006).
33. Speaker at AMS special session on “Lie algebras and applications,” San Francisco State University, San Francisco, CA (April 29-30 2006).
34. Speaker at “Algebraic groups and finite reductive groups,” Bernoulli center, EPFL, Lausanne, Switzerland (June 13-18 2005).
35. Speaker at “Representations of Kac-Moody algebras and combinatorics,” BIRS, Canada (March 27–31 2005).
36. Participant in “Enveloping algebras,” Oberwolfach, Germany (March 13–March 18 2005).

37. Representation theory seminar, EPFL, Lausanne, Switzerland (April 17 2004).
38. Seminaire Chevalley, University of Paris VII, France (April 8 2004).
39. Seminaire d'algèbre, University of Lyon I, France (March 16, April 21 2004).
40. Algebra seminar, University of Cambridge, UK (February 16 2004).
41. Colloquium and algebra seminar, University of Virginia, Charlottesville, VA (January 21-22 2004).
42. Algebra colloquium, University of Birmingham, UK (January 27 2004).
43. Speaker at Bristol-Leicester-Oxford representation theory meeting, University of Oxford, UK (January 9 2004).
44. London Algebra Colloquium, UK (November 27 2003).
45. Colloquium talk at University of Leicester, UK (November 20 2003).
46. Speaker at "Current trends in representation theory of finite groups," BIRS, Canada (October 25–30 2003).
47. Series of six lectures on "Combinatorial representation theory," Bristol University, UK (Fall 2003).
48. Speaker at California Lie theory seminar at Riverside, CA (November 9–10 2002).
49. Speaker at AMS special session on "Lie algebras and related topics" at University of Wisconsin (Madison) (October 12–13 2002).
50. Speaker at AMS summer meeting on "Cohomology of finite groups" at Mt. Holyoke College, MA (June 2002).
51. Colloquium talk and Lie theory seminar at University of Wisconsin (Madison) (September 18,21 2001).
52. Speaker at "Groups, geometry and combinatorics," Durham, UK (July 16–July 26 2001).
53. Undergraduate talk on "Knots and physics" given at Linfield College, OR (May 2001).
54. Speaker at "Representation theory of finite groups," Oberwolfach, Germany (March 26–March 30 2001).
55. Joint OU-OSU colloquium talk given at OSU, Corvallis, OR (February 20 2001).

56. Undergraduate talk on “Kazhdan-Lusztig polynomials” given at Reed College, OR (February 15 2001).
57. Speaker at AMS special session on “Representations of finite groups,” New Orleans, LA (January 5–January 7 2001).
58. Speaker at “Groups, geometries and combinatorics,” Milan, Italy (May 15–May 19 2000).
59. Speaker at “Représentations des groupes algébriques,” CIRM, Luminy, France (November 15–November 19 1999).
60. Speaker at “Representations of finite groups,” Oberwolfach, Germany (June 20–June 25 1999).
61. Speaker at mini-conference on “Finite group representations,” Stuttgart, Germany (June 17 1999).
62. Speaker at “Representations of algebraic groups” conference, Aarhus, Denmark (July 19–August 8 1998).
63. Speaker at CBMS conference, University of North Texas, Denton, TX (May 25–29 1998).
64. Colloquium talk given at Department of Mathematics, OSU, Corvallis, OR (October 18, 1997).
65. Resident at Isaac Newton Institute, Cambridge, UK (Jan–June 1997); speaker at NATO ASI, Cambridge, UK (June 1997).
66. Contributed talk to AMS Summer Research Institute, Seattle, WA (August 1996).

## SERVICE WITHIN THE MATHEMATICAL COMMUNITY

1. Organizer of AMS special session on “Categorical and algebraic methods in representation theory,” San Francisco, January 2010.
2. Organizer of LMS Symposium in “Representation Theory,” Durham, UK, July 2009.
3. Editor-in-chief for *J. Algebraic Combinatorics* (from January 2007).
4. Special session organizer for regional AMS meeting on “Representations of groups and algebras,” University of Oregon, November 12-13, 2005.
5. Local organizer for NSF funded workshop on “Lie groups and Lie algebras,” University of Oregon, October 8–9, 2005.

6. NSF panelist (DMS algebra and combinatorics), Washington DC, January 2004, January 2008, January 2009.
7. Reviewer for NSF, NSA, BSF (Israel) and EPSRC (UK) grant proposals.
8. Reviewer for promotions of colleagues at other universities.
9. Referee for mathematical journals.
10. Reviewer for *Mathematical reviews*.

## SERVICE WITHIN THE UNIVERSITY

1. Chair of Probability Search Committee, 2009/10.
2. Chair of Science Council, 2008/09, 2009/10.
3. Head of Graduate Studies, 2008/09.
4. Member of internal Assistant Department Head search committee, Spring 2008.
5. Elected member of Faculty Personnel Committee, 2005/07.
6. Chair of internal Department Head Search Committee, Winter 2007.
7. Chair of Graduate Appointments Committee, 2005/06.
8. Chair of Website Design Committee, 2004/05; Webmaster 2005/06, 2006/07, 2007/08, 2008/09.
9. Member of Faculty Open Search Committee, 2004/05.
10. Head of Graduate Studies, 2001/02, 2002/03, 2004/05.
11. Chair of Mathematics Education Search Committee, 2002/03.
12. Member of School of Education Search Committee, 2001/02.
13. Member of Departmental Executive Committee, 1998/99, 1999/00 (chair), 2000/01, 2001/02, 2002/03, 2004/05, 2005/06, 2006/07 (chair), 2007/08, 2008/09. 2009/10.
14. Talks at Freshmen Science Honors Colloquia (2002, 2007).