## **Bibliography**

Adamek	[1] J Adamek, H Herrlich, and G E Strecker, Abstract and concrete categories, John Wiley (or free on-line edition), $1990/2004$ .
Adamson71	[2] I T Adamson, Rings, modules and algebras, Oliver and Boyd, 1971.
AndersonFuller74	[3] F W Anderson and K R Fuller, Rings and categories of modules, Springer, 1974.
Auslander74	[4] M Auslander, Representation theory of Artin algebras I, Communications in Algebra 1 (1974), 177–268.
Ayres74	[5] F Ayres Jr, <i>Theory and problems of Matrices</i> , Schaum's outline, Schaum - McGraw-Hill, London, 1974.
Bass68	[6] H Bass, Algebraic K-theory, Benjamin, New York, 1968.
Benson95	[7] D J Benson, Representations and cohomology I, Cambridge, 1995.
Birkhoff48	[8] G Birkhoff, Lattice theory, AMS, 1948.
Birman75	[9] J S Birman, <i>Braids, links and mapping class groups</i> , vol. 82, Annals of Mathematics Studies, Princeton University Press, Princeton NJ, 1975.
Boe88	[10] B D Boe, Kazhdan-lusztig polynomials for Hermitian symmetric spaces, Tr. A.M.S. <b>309</b> (1988), 279–294.
Boerner	[11] H Boerner, Representations of groups, North Holland, 1970.
boerner70	[12], Representations of groups, North Holland, 1970.
Brauer37	[13] R Brauer, On algebras which are connected with the semi–simple continuous groups, Annals of Mathematics 38 (1937), 854–872.
Brauer39	[14], On modular and p-adic representations of algebras, Proc Nat Acad Sci USA 25 (1939), 252–258.
Brown55	[15] W P Brown, An algebra related to the orthogonal group, Michigan Math. J. 3 (1955-56), 1–22.

1981, online Millenium Edition available.

[16] S Burris and H P Sankappanavar, A course in universal algebra, GTM, Springer-Verlag,

Cameron98 [17] P J Cameron, Sets, logic and categories, Springer, 1998. CanduSaleur08 [18] C Candu and H Saleur, A lattice approach to the conformal OSp(2s+2|2s) supercoset sigma model. part I: Algebraic structures in the spin chain. the Brauer algebra, Nucl. Phys. B808 (2009), 441-486.[19] J W Carter, On the representation theory of the finite groups of Lie type over an algebraically Carter closed field of characteristic 0, Tech. report, Warwick. Cassels86 [20] J W S Cassels, Local fields, LMS Student Texts 3, Cambridge, 1986. ChariPressley95 [21] V Chari and A Pressley, Quantum groups, Cambridge, 1995. [22] E Cline, B Parshall, and L Scott, J. reine angew Math. 391 (1988), 85. CPS eParshallScott88 \_\_\_\_\_, Finite-dimensional algebras and highest weight categories, J. reine angew. Math. 391 (1988), 85-99.[24] P M Cohn, Algebra vol.2, Wiley, New York, 1982. Cohn82 [25] A G Cox, P P Martin, A E Parker, and C C Xi, Representation theory of towers of rec-MartinParkerXi06 ollement: theory, notes and examples, J Algebra 302 (2006), 340–360, DOI 10.1016 online (math.RT/0411395).visscherMartin05 [26] A G Cox, M De Visscher, and P P Martin, The blocks of the Brauer algebra in characteristic zero, Representation Theory 13 (2009, submitted 2005), 272–308, (math.RT/0601387). \_\_\_\_\_, A geometric characterisation of the blocks of the Brauer algebra, JLMS (to appear) visscherMartin06 (submitted 2006), (math.RT/0612584). visscherMartin08 , Alcove geometry and a translation principle for the Brauer algebra, preprint (submitted 2008). [29] R H Crowell and R H Fox, Introduction to knot theory, Ginn, 1963. CrowellFox CurtisReiner62 [30] C W Curtis and I Reiner, Representation theory of finite groups and associative algebras, Wiley Interscience, New York, 1962. \_\_\_\_\_, Representation theory of finite groups and associative algebras, Wiley Interscience,  ${\tt CurtisReinerI}$ New York, 1962. CurtisReiner81 \_\_\_\_\_, Methods of representation theory with applications to finite groups and orders, vol. 1, Wiley, New York, 1981.

\_\_\_\_\_, Methods of representation theory with applications to finite groups and orders, vol. 1,

[34] G deB Robinson, Representation theory of the symmetric group, University of Toronto Press,

[35] V V Deodhar, On some geometric aspects of Bruhat orderings II. the parabolic analogue of

Kazhdan-Lusztig polynomials, J Algebra 111 (1987), 483–506.

CurtisReinerII

Robinson61

Deodhar87

Wiley, New York, 1990.

1961.

GreenDiaconis89 [36] P Diaconis and C Green, Applications of Murphy's elements, Stanford Technical Report (1989).DlabRingel [37] V Dlab and C M Ringel, Compositio Mathematica 70 (1989), 155–175. [38] \_\_\_\_\_\_, A construction for quasi-hereditary algebras, Compositio Mathematica 70 (1989), DlabRingel89 \_\_, A construction for quasi-hereditary algebras, Compositio Mathematica 70 (1989), DlabRinge189a 155-175. DlabRinge189b [40] \_\_\_\_\_\_, Quasi-hereditary algebras, Illinois J Math **33** (1989), 280–291. [41] V. Dlab and C. M. Ringel, The module theoretic approach to quasi-hereditary algebras, Rep-DlabRinge192 resentations of algebras and related topics (H. Tachikawa and S. Brenner, eds.), LMS Lecture Note Series, vol. 168, Cambridge U P, 1992, pp. 200–224. Donkin98 [42] S Donkin, The q-Schur algebra, LMS Lecture Notes Series, vol. 253, Cambridge University Press, 1998. ranWalesHanlon99 [43] W F Doran, D B Wales, and P J Hanlon, On semisimplicity of the Brauer centralizer algebras, J Algebra **211** (1999), 647–685. EnrightShelton87 [44] T J Enright and B Shelton, Categories of highest weight modules: applications to classical Hermitian symmetric pairs, Memoirs AMS 67 (1987), no. 367. [45] P Freyd, Abelian categories, Harper and Row, 1964. Freyd64 [46] W Fulton, Young tableaux, CUP, 1997. Fulton97 FultonHarris91 [47] W Fulton and J Harris, Representation theory, Springer, 1991. [48] O Ganyushkin and V Mazorchuk, Classical finite transformation semigroups, Springer, 2009. yushkinMazorchuk [49] J E Goodman and J O'Rourke (eds.), Handbook of discrete and computational geometry, GoodmanORourke97 CRC, 1997. GrahamLehrer96 [50] J. J. Graham and G. I. Lehrer, Cellular algebras, Invent. Math. 123 (1996), 1–34. [51] J A Green, Polynomial representations of  $GL_n$ , Springer-Verlag, Berlin, 1980. Green80 Hamermesh62 [52] M Hamermesh, Group theory, Pergamon, Oxford, 1962. Hartshorne [53] R. Hartshorne, Algebraic geometry, Graduate Texts in Mathematics 52, Springer, 1977. iltonStammbach71 [54] P J Hilton and U Stammbach, A course in homological algebra, Springer, 1971. [55] P N Hoefsmit, Representations of Hecke algebras of finite groups with BN pairs of classical Hoefsmit type, Ph.D. thesis, University of British Columbia, 1974.

[56] J M Howie, Fundamental of semigroup theory, OUP, 1995.

[57] J E Humphreys, Reflection groups and Coxeter groups, Cambridge University Press, 1990.

Howie95

Humphreys90

[58] N Jacobson, Lie algebras, wiley 1962, dover 1979 ed., Dover, 1962. Jacobson62 [59] \_\_\_\_\_, Structure of rings, AMS, 1964. Jacobson64 JacobsonI [60] \_\_\_\_\_\_, Basic Algebra I, Freeman, 1980. JacobsonII [61] \_\_\_\_\_\_, Basic Algebra II, Freeman, 1980. Jacobson80 [62] \_\_\_\_\_, Basic Algebra II, Freeman, 1980. James78 [63] G. D. James, The representation theory of the symmetric groups, Lecture Notes in Mathematics 682, Springer, 1978. JamesKerber [64] G D James and A Kerber, The representation theory of the symmetric group, Addison-Wesley, London, 1981. [65] \_\_\_\_\_, The representation theory of the symmetric group, Addison-Wesley, London, 1981. JamesKerber81 Jantzen87 [66] J C Jantzen, Representations of algebraic groups, Academic Press, 1987. [67] M Jimbo, A q-difference analogue of U(g) and the Yang-Baxter equation, Lett Math Phys Jimbo85 **10** (1985), 63–69. [68] A Joseph, Quantum groups and their primitive ideals, Springer-Verlag, 1995. Joseph95 JoyalStreet93 [69] A Joyal and R Street, Braided tensor categories, Adv Math 102 (1993), 20–78, (Macquarie MR850067/860081). [70] C. Kassel, Quantum groups, Springer-Verlag, 1995. Kassel Kassel95 [71] C Kassel, Quantum groups, Springer, 1995. [72] D Kazhdan and G Lusztig, Representations of coxeter groups and Hecke algebras, Inventiones KazhdanLusztig79 Math. **53** (1979), 165–184. Kerov03 [73] S V Kerov, Asymptotic representation theory of the symmetric group and its applications in analysis, Translations, vol. 219, AMS, 2003. Lang [74] S Lang, Algebra, 3 ed., Addison Wesley. [75] A Lascoux and M-P Schutzenberger, Polynomes de kazhdan et lusztiq pour les grassmanni-Schutzenberger81 ennes, Asterisque 87-88 (1981), 249-266. LeducRam97 [76] R Leduc and A Ram, A ribbon Hopf algebra approach to the irreducible representations of centralizer algebras: the Brauer, Birman-Wenzl, and type-A Iwahori-Hecke algebras, Adv. Math. **125** (1997), 1–94. [77] I Macdonald, Symmetric functions and Hall polynomials, 2nd ed., Oxford, 1995. Macdonald95 [78] S Maclane and G Birkoff, Algebra, Collier Macmillan, New York, 1979.

[79] W Magnus, A Karrass, and S Solitar, Combinatorial group theory, Wiley, 1966.

MaclaneBirkoff79

KarrassSolitar66

MarshMartin06	[80] R Marsh and P Martin, Pascal arrays: Counting Catalan sets, preprint (2006), arXiv:math/0612572v1 [math.CO].
MarDevCo	[81] P P Martin, Some notes on the Brauer algebra, 2005.
Martin90	[82], Representations of graph Temperley-Lieb algebras, Publications of R.I.M.S. Kyoto University <b>26</b> (1990), 485.
Martin91	[83], Potts models and related problems in statistical mechanics, World Scientific, Singapore, 1991.
Martin92	[84], On Schur-Weyl duality, $A_n$ Hecke algebras and quantum $sl(N)$ , Int J Mod Phys A 7 suppl.1B (1992), 645–674.
Martin94	[85], Temperley–Lieb algebras for non–planar statistical mechanics — the partition algebra construction, Journal of Knot Theory and its Ramifications 3 (1994), no. 1, 51–82.
Martin96	[86], The structure of the partition algebras, J Algebra 183 (1996), 319–358.
Martin08	[87], The decomposition matrices of the Brauer algebra over the complex field, preprint (2008), (http://arxiv.org/abs/0908.1500).
tinGreenParker07	[88] P P Martin, R M Green, and A E Parker, Towers of recollement and bases for diagram algebras: planar diagrams and a little beyond, J Algebra <b>316</b> (2007), 392–452, (math.RT/0610971).
MartinMcanally92	[89] P P Martin and D S McAnally, On commutants, dual pairs and non-semisimple algebras from statistical mechanics, Int J Mod Phys A <b>7 suppl.1B</b> (1992), 675–705.
MartinSaleur93	[90] P P Martin and H Saleur, On an algebraic approach to higher dimensional statistical me- chanics, Commun. Math. Phys. 158 (1993), 155–190.
MartinSaleur94a	[91], The blob algebra and the periodic Temperley–Lieb algebra, Lett. Math. Phys. 30 (1994), 189–206, (hep-th/9302094).
MartinSaleur94c	[92] ${3644}$ , On algebraic diagonalisation of the XXZ chain, Int J Mod Phys B <b>8</b> (1994), 3637–
MartinWoodcock98	[93] P P Martin and D Woodcock, The partition algebras and a new deformation of the Schur algebras, J Algebra <b>203</b> (1998), 91–124.
rtinWoodcock2000	[94], On the structure of the blob algebra, J Algebra <b>225</b> (2000), 957–988.
MartinWoodcock03	[95], Generalized blob algebras and alcove geometry, LMS J Comput Math 6 (2003), 249–296, (math.RT/0205263).
inWoodcockLevy00	[96] P P Martin, D Woodcock, and D Levy, A diagrammatic approach to Hecke algebras of the reflection equation, J Phys A <b>33</b> (2000), 1265–1296.
.WoodcockLevy2000	[97], A diagrammatic approach to Hecke algebras of the reflection equation, J Phys A 33 (2000), 1265–1296.

Mendelson62 [98] B Mendelson, Introduction to topology, Blackie, 1962.

Moise77 [99] E E Moise, Geometric topology in dimensions 2 and 3, Graduate Texts in Mathematics 47, Springer-Verlag, New York, 1977.

Murnaghan38 [100] F D Murnaghan, The theory of group representations, Johns Hopkins 1938/Dover 1963, 1938.

Murphy81 [101] G E Murphy, A new construction of Young's seminormal representation of the symmetric group, J Algebra 69 (1981), 287–291.

Nazarov96 [102] M Nazarov, Young's orthogonal form for Brauer's centralizer algebra, J Algebra 182 (1996), 664–693.

OrellanaRam01 [103] R Orellana and A Ram, Affine braids, Markov traces and the category O, Newton Institute preprint NI01032-SFM, 2001.

Perlis58 [104] Perlis, Theory of matrices, Addison-Wesley, 1958.

RamWenz192 [105] A Ram and H Wenzl, Matrix units for centralizer algebras, J Algebra 145 (1992), 378–395.

hetikhinTuraev90 [106] N Yu Reshetikhin and V G Turaev, Ribbon graphs and their invariants derived from quantum groups, Comm Math Phys 127 (1990), 1–26.

Ringel [107] C. M. Ringel, The category of modules with good filtrations over a quasi-hereditary algebra has almost split sequences, Math. Z. 208 (1991), 209–225.

[108] N El Samra and R King, Dimensions of irreducible representations of the classical Lie groups, J Phys A 12 (1979), 2317–2328.

Schur [109] I. Schur, Über eine Klasse von Matrizen, die sch einer gegebenen Matrix zuordnen lassen, I. Schur: Gesammelte Abhandlungen (A. Brauer and H. Rohrbach, eds.), vol. I, Springer–Verlag, 1973, pp. 1–71.

Serre65 [110] J P Serre, Lie algebras and Lie groups, Benjamin, 1965.

Soergel97a [111] W. Soergel, Kazhdan-Lusztig polynomials and a combinatoric for tilting modules, Representation Theory 1 (1997), 83–114.

Specht35 [112] W Specht, Die irreduziblen darstellungen der symmetrischen gruppe, Math Z **39** (1935), 696-711.

Wenz188 [113] H Wenzl, Hecke algebras of type  $A_n$  and subfactors, Inventiones Math. 92 (1988), 349–383.

Yamanouchi 37 [114] T Yamanouchi, Proc Phys-Math Soc, Japan 19 (1937), 436.

ZariskiSamuel58 [115] O Zariski and P Samuel, Commutative algebra vol.1, Springer, 1958.

ZariskiSamuel [116] \_\_\_\_\_, Commutative algebra vol.1, Springer, 1958.

Ziegler95 [117] G M Ziegler, Lectures on polytopes, Springer, 1995.

## Index

p-modular system, 198	category
	skeletally small, 211
affine variety, 33	Cayley graph, 37, 141
alcove, 57, 258, 262, 279	Chamber, 54
alcove geometry, 263	chamber, 48
Algebra, 16, 121	character, 13
Brauer, 197	complex, 141
Hecke, 161, 163	polyhedral, 49
partition, 181	cone order, 142
Temperley–Lieb, 169	content, 154
algebra	continuous group, 336
basic, 211	coset space, 59
quasihereditary, 212	Coxeter system, 52
Temperley–Lieb, 32	,
algebraic group, 333	decomposition matrix, 22
Artin-Wedderburn Theorem, 19	diagram
axiom of choice, 30	partition, 183
	Temperley–Lieb, 169
balanced map, 105	digraph
block graph, 256	acyclic, 36
block relation, 256	rooted, 36
bottleneck principle, 205	Domain, 27
braid group, 161	dominance order, 69, 236, 241
Bratteli diagram, 153	dominant, 292
Brauer 'modular' system, 198	dual graph, 263
Brauer reciprocity, 43, 126, 212	
Bruhat order, 57, 141	facet, 48, 263, 277, 279
Burnside's Theorem, 122	Field, 27
	filtration, 104, 226
Cartan decomposition matrix, 22, 43, 129	Form
Cartan invariants, 124	bilinear, 134
Cartan matrix, 52	contravariant, 135
Category, 73	Frobenius reciprocity, 110
concrete, 75	Functor, 75
dual/opposite, 74	globalisation, 128
partition, 181	localisation, 128
small, 77	restriction, 105, 119

374 INDEX

functor	homomorphism, 98
induction, 110	projective, 19, 128
,	module
graph	semisimple, 99
connected, 37	Module Homomorphism, 28
geometric dual, 141	Monoid, 27
Grothendieck group, 22, 201, 225, 228	monoid
Group, 27	regular, 28
Abelian, 27	Temperley–Lieb, 32
reflection, 51	Morita equivalence, 120
Symmetric, 139	multipartition, 155
group presentation, 52	munipartition, 199
0, v-	Peirce decomposition, 20
head, 116, 173, 224	permutahedron, 141
Hecke algebra, 60	polytope, 141
homeomorphism, 162	Principal Ideal Domain, 27
hook length, 153, 154, 164	
	propagating line, 183, 205
Ideal, 28	propagating number, 219
idempotent	guagi haradity 120, 240
primitive, 44	quasi-heredity, 130, 240
idempotent lifting, 112	quasiregular, 17
Integral Domain, 27	quiver, 37
isotopy, 162	radical 116
107	radical, 116
Jacobsen radical, 17	Jacobson, 43
join semilattice, 35	reductive representation theory, 198
Jordan–Holder Theorem, 17, 81, 104	reflection group, 51
Jucys-Murphy elements, 244	regular, 69, 258, 260
,	rim, 68, 250
Kazhdan–Lusztig polynomial, 60	rim hook, 68
Krull-Schmidt Theorem, 19, 104	Ring, 27
	Artinian, 17, 243
lattice, 35	Division, 27, 123
length function, 53	Local, 27
Lie algebra, 22, 60	Noetherian, 17
Lie group, 60	ring
Littlewood–Richardson coefficients, 247	semiperfect, 112
	root system, 51
Module, 28, 97	positive, 52
Absolutely Simple, 122	
Brauer, 130	Schrier Refinement Theorem, 81
category, 98	Schur's Lemma, 244
composition factor, 104	Schur's lemma, 18, 122
composition series, 104	Semigroup, 27
direct sum, 99	semisimple element, 333
free, 100	simplex, 47

INDEX 375

skew, 68
Smith normal form, 134
socle, 116
solvable group, 11
Splitting field, 123
subcategory
dense, 211
isomorphism dense, 211

Tensor product, 105 torus, 333 tower of recollement, 212 transitive group action, 141

unitary representation, 14 universal enveloping algebra, 23

Young diagram, 67 skew, 68 Young graph, 67 Young lattice, 67 Young's orthogonal form, 153

Zorn's Lemma, 18