

Contents

Preface	v
Contents	ix
1 On infinite-dimensional Hopf algebras	1
<i>by Nicolás Andruskiewitsch</i>	
1 Introduction	1
2 Preliminaries	2
3 Properties	10
4 Pointed Hopf algebras	16
5 Beyond pointed Hopf algebras	27
6 Questions	35
References	38
2 Spaces of Bridgeland stability conditions in representation theory	47
<i>by Anna Barbieri</i>	
1 Introduction	47
2 Stability conditions	48
3 The stability manifold	58
4 An example: The stability manifold of CY_3 categories from surfaces	64
References	80
3 Quasi-cluster algebras: An overview	85
<i>by Véronique Bazier-Matte</i>	
1 Introduction	85
2 Marked surfaces and triangulations	87
3 Quasi-cluster algebras	96
4 Categorification of quasi-cluster algebras	101
5 Expansion formula for cluster variables	107
6 Alternative definition of quasi-cluster algebras	111
References	117
4 Exact structures for persistence modules	121
<i>by Benjamin Blanchette, Thomas Brüstle, and Eric J. Hanson</i>	
1 Introduction	121

2	Preliminaries	123
3	General theory of exact structures	130
4	Homological invariants	134
5	Global dimensions and the representation dimension	137
6	Characterizations of irreducible morphisms	140
7	Exact structures for infinite posets	148
	References	157
5	What is an exact dg category?	161
	<i>by Xiaofa Chen</i>	
1	Introduction	161
2	Preliminaries	168
3	Exact dg categories	172
4	Main results	179
	References	185
6	Differential graded enhancements of singularity categories	191
	<i>by Xiao-Wu Chen and Zhengfang Wang</i>	
1	Introduction	191
2	Quotient categories and singularity categories	192
3	The Vogel dg category	198
4	The singularity category	206
5	The singular Yoneda dg category	214
	References	221
7	Tame symmetric algebras: Hybrid algebras as a route to a classification	227
	<i>by Karin Erdmann</i>	
1	Introduction	227
2	Preliminaries	230
3	The presentations	233
4	Weighted surface algebras	235
5	Generalizing dihedral type	241
6	Hybrid algebras	246
7	Stable Auslander–Reiten components	252
	References	257

8	Wall-and-chamber structures for finite-dimensional algebras and τ-tilting theory	261
	<i>by Maximilian Kaipel and Hipolito Treffinger</i>	
1	Introduction	261
2	Preliminaries	262
3	Stability conditions	265
4	τ -tilting theory	273
5	From τ -tilting theory to wall-and-chamber structures	287
6	A detailed example	292
	References	295
9	Towards bound quivers for exact categories	297
	<i>by Julian Külshammer</i>	
1	Introduction	297
2	Bound quivers for abelian categories	300
3	Exact categories	308
4	Regular exact subalgebras	314
5	The case of quasi-hereditary algebras	317
6	Examples	322
	References	328
10	An introduction to monomorphism categories	333
	<i>by Sondre Kvamme</i>	
1	Introduction	333
2	Monomorphic representations of quivers	335
3	An epivalence and the Mimo construction	345
4	Valuated groups	355
5	Correction to the literature	375
	References	380
11	Bricks and mutation	385
	<i>by Rosanna Laking</i>	
1	Introduction	385
2	The brick labelling via simple tilts	387
3	Mutation via simple tilts	404
	References	415

12	Categories associated to punctured surfaces and surface braid twist group actions on triangulated categories	417
	<i>by Sebastian Opper</i>	
1	Spherical objects and their groups actions	418
2	Brauer graph algebras	425
3	Line fields, winding numbers and mapping class groups	430
4	Graded Brauer graph algebras and actions by surface braid twist groups	434
	References	439
13	Mutations and derived equivalences for commutative noetherian rings .	441
	<i>by Jorge Vitória</i>	
1	Introduction	441
2	Preliminaries	442
3	A guide to compactly generated t-structures for a commutative noetherian ring	447
4	Mutation	450
5	Derived equivalences	455
6	Mutations for bounded t-functions	460
	References	462
14	Derived equivalences of Brauer graph algebras	465
	<i>by Alexandra Zvonareva</i>	
1	Introduction	465
2	Notation	466
3	Brauer graph algebras	467
4	Brauer tree algebras	468
5	Symmetric stably biserial algebras	470
6	Derived invariants of Brauer graph algebras and symmetric stably biserial algebras	473
7	Brauer graph algebras are closed under derived equivalence	475
8	Kauer moves and the case of a sphere	476
9	Derived equivalence classification of Brauer graph algebras	478
	References	490
	List of contributors	495