

Contents

Preface	v
Contents	vii
Introduction	1
1 C^*-algebras of twisted étale groupoids and Cartan pairs	3
<i>by Alcides Buss</i>	
1 Introduction and historical motivation	3
2 Étale groupoids and twists	6
3 Twists over étale groupoids	21
4 Cartan subalgebras and reconstruction of twisted groupoids	50
5 Reconstruction of the twisted groupoid from a Cartan pair	53
References	64
2 Classifiability of crossed products	69
<i>by Eusebio Gardella</i>	
1 Introduction	69
2 Group actions and crossed products	72
3 Crossed products within Elliott's program	86
4 Amenable groups and the small boundary property	104
5 Paradoxical groups and purely infinite C^* -algebras	115
6 Open problems and questions	120
A Structure and classification of C^* -algebras	122
References	129
3 Subshifts and their algebras	133
<i>by Daniel Gonçalves</i>	
1 Introduction	133
2 Subshifts	134
3 Conjugacy of subshifts	137
4 Unital algebras associated with a subshift	140
5 The socle of a subshift algebra	150
6 K-theory of subshift C^* -algebras	163
7 Conjugacy invariants	166
References	170

4	Dualisable categories in noncommutative geometry	175
	<i>by Devarshi Mukherjee and Thomas Nikolaus</i>	
1	Introduction	175
2	Presentable, dualisable, and rigid categories	179
3	Functional analysis revisited – bornologies and condensed mathematics	195
4	Higher categorical perspectives on operator algebras	213
5	Definition of algebraic K-theory	218
6	Properties of K-theory	227
7	Noncommutative motives	236
8	Assembly maps	247
	References	254
5	An overview on self-similar graphs, their generalizations, and their associated algebras	257
	<i>by Enrique Pardo</i>	
1	Introduction	257
2	The origins	258
3	Self-similar graphs and their algebras	263
4	$\mathcal{O}_{G,E}$ as a groupoid algebra	270
5	$\mathcal{O}_{G,E}$ as a Cuntz–Pimsner algebra	284
6	Self-similar graphs of countable graphs	289
7	Some generalizations of self-similar graphs	298
8	Left cancellative small categories and their algebras	311
9	Zappa–Szép products of groups acting on LCSC categories	324
10	Zappa–Szép products of groupoids acting on LCSC categories ..	328
11	Homology and K-theory for self-similar graph algebras	338
	References	346
6	Bivariant algebraic K-theory	351
	<i>by Emanuel Rodríguez Cirone</i>	
1	Introduction	351
2	Bivariant algebraic K-theory via its universal properties	352
3	Equivariant kk-theory and the KH-isomorphism conjecture	373
4	Homotopy structures realising kk-theory	390
	References	400

7	An introduction to quantum symmetries	403
	<i>by Christian Voigt</i>	
	Preface	403
1	Introduction	404
2	Tensor categories and quantum groups	413
3	Infinite quantum symmetries	423
4	Quantum symmetries in topology	435
	References	447
	List of contributors	449