

Contents

	<i>page</i>
<i>Preface</i>	ix
1 Coalgebras, bialgebras and Hopf algebras. $U_q(b_+)$	1
2 Dual pairing. $SL_q(2)$. Actions	9
3 Coactions. Quantum plane \mathbb{A}_q^2	17
4 Automorphism quantum groups	23
5 Quasitriangular structures	29
6 Roots of unity. $u_q(sl_2)$	34
7 q -Binomials	39
8 Quantum double. Dual-quasitriangular structures	44
9 Braided categories	52
10 (Co)module categories. Crossed modules	58
11 q -Hecke algebras	64
12 Rigid objects. Dual representations. Quantum dimension	70
13 Knot invariants	77
14 Hopf algebras in braided categories. Coaddition on \mathbb{A}_q^2	84
15 Braided differentiation	91
16 Bosonisation. Inhomogeneous quantum groups	98
17 Double bosonisation. Diagrammatic construction of $u_q(sl_2)$	105
18 The braided group $U_q(n_+)$. Construction of $U_q(\mathfrak{g})$	113
19 q -Serre relations	120
20 R -matrix methods	126
21 Group, algebra, Hopf algebra factorisations. Bicrossproducts	132
22 Lie bialgebras. Lie splittings. Iwasawa decomposition	139
23 Poisson geometry. Noncommutative bundles. q -Sphere	146
24 Connections. q -Monopole. Nonuniversal differentials	153
<i>Problems</i>	159
<i>Bibliography</i>	166
<i>Index</i>	167