

Commuting Elements in q -Deformed Heisenberg Algebras

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Commuting Elements In Qdeformed Heisenberg Algebras

**Marcel De Jeu, Christian
Svensson, Sergei D. Silvestrov**



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Noncommutative algebras rings and other noncommutative objects along with their more classical commutative counterparts have become a key part of modern mathematics physics and many other fields The q deformed Heisenberg algebras defined by deformed Heisenberg canonical commutation relations of quantum mechanics play a distinguished role as important objects in pure mathematics and in many applications in physics The structure of commuting elements in an algebra is of fundamental importance for its structure and representation theory as well as for its applications The main objects studied in this monograph are q deformed Heisenberg algebras more specifically commuting elements in q deformed Heisenberg algebras In this book the structure of commuting elements in q deformed Heisenberg algebras is studied in a systematic way Many new results are presented with complete proofs Several appendices with some general theory used in other parts of the book include material on the Diamond lemma for ring theory a theory of degree functions in arbitrary associative algebras and some basic facts about q combinatorial functions over an arbitrary field The bibliography contains in addition to references on q deformed Heisenberg algebras some selected references on related subjects and on existing and potential applications The book is self contained as far as proofs and the background material are concerned In addition to research and reference purposes it can be used in a special course or a series of lectures on the subject or as complementary material to a general course on algebra Specialists as well as doctoral and advanced undergraduate students in mathematics and physics will find this book useful in their research and study

Algebraic Curves for Commuting Elements in the Q-deformed Heisenberg Algebra Marcel De Jeu, Christian Svensson, Sergei D. Silvestrov, 2007

Generalized Lie Theory in Mathematics, Physics and Beyond Sergei D. Silvestrov, Eugen Paal, Viktor Abramov, Alexander

Stolin, 2008-11-18 This book explores the cutting edge of the fundamental role of generalizations of Lie theory and related non commutative and non associative structures in mathematics and physics

Algebra, Geometry and Mathematical Physics Abdenacer Makhlouf, Eugen Paal, Sergei D. Silvestrov, Alexander Stolin, 2014-06-17 This book collects the proceedings of the Algebra Geometry and Mathematical Physics Conference held at the University of Haute Alsace France October 2011 Organized in the four areas of algebra geometry dynamical symmetries and conservation laws and mathematical physics and applications the book covers deformation theory and quantization Hom algebras and n ary algebraic structures Hopf algebra integrable systems and related math structures jet theory and Weil bundles Lie theory and applications non commutative and Lie algebra and more The papers explore the interplay between research in contemporary mathematics and physics concerned with generalizations of the main structures of Lie theory aimed at quantization and discrete and non commutative extensions of differential calculus and geometry non associative structures actions of groups and semi groups non commutative dynamics non commutative geometry and applications in physics and beyond The book benefits a broad

audience of researchers and advanced students **Commutation Relations, Normal Ordering, and Stirling Numbers** Toufik Mansour, Matthias Schork, 2015-09-18 Commutation Relations Normal Ordering and Stirling Numbers provides an introduction to the combinatorial aspects of normal ordering in the Weyl algebra and some of its close relatives The Weyl algebra is the algebra generated by two letters U and V subject to the commutation relation $UV - VU = I$ It is a classical result that normal ordering pow **Algebraic Structures and Applications** Sergei Silvestrov, Anatoliy Malyarenko, Milica Rančić, 2020-06-18 This book explores the latest advances in algebraic structures and applications and focuses on mathematical concepts methods structures problems algorithms and computational methods important in the natural sciences engineering and modern technologies In particular it features mathematical methods and models of non commutative and non associative algebras hom algebra structures generalizations of differential calculus quantum deformations of algebras Lie algebras and their generalizations semi groups and groups constructive algebra matrix analysis and its interplay with topology knot theory dynamical systems functional analysis stochastic processes perturbation analysis of Markov chains and applications in network analysis financial mathematics and engineering mathematics The book addresses both theory and applications which are illustrated with a wealth of ideas proofs and examples to help readers understand the material and develop new mathematical methods and concepts of their own The high quality chapters share a wealth of new methods and results review cutting edge research and discuss open problems and directions for future research Taken together they offer a source of inspiration for a broad range of researchers and research students whose work involves algebraic structures and their applications probability theory and mathematical statistics applied mathematics engineering mathematics and related areas **Revue roumaine de mathématiques pures et appliquées** ,2001 **Mathematical Reviews** ,2001 **The British National Bibliography** Arthur James Wells,2009 **Quantum Groups and Related Topics** Roman Gielerak, Jerzy Lukierski, Z. Popowicz, 1992 This volume presents the lectures given by distinguished contributors at the First German Polish Max Born Symposium held at Wojnowice in Poland in September 1991 This is the first such symposium to continue the tradition of a German Polish collaboration in theoretical physics in the form of biannual seminars organized between the Universities of Leipzig and Wrocław since the early seventies *Journal of Physics* ,2002 **Q-deformed Heisenberg Algebras and Their Commuting Subsets** ,2009 **Quantum Groups, Formalism and Applications** Jerzy Lukierski, Ziemowit Popowicz, Jan Sobczyk, 1995 *Advances in Cryptology* ,1994 **Physics Letters** ,1995 *Physics Briefs* ,1994 *Physical Review* ,1994-03 *Referativnyi zhurnal* ,1995 **On Centralisers in Q-deformed Heisenberg Algebras** Lars Hellström, Sergei D. Silvestrov, Kungl. Tekniska högskolan. Department of Mathematics, 1997 **Український фізичний журнал** ,1998

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