## Chapter 1 : Hopf algebras - PDF Free Download

*The concept of Hopf algebras was first introduced in the theory of algebraic topology but in recent years has been developed by many mathematicians and applied to other areas of mathematics such as Lie groups, algebraic groups and Galois theory.*

Biproducts and two-cocycle twists of Hopf algebras by David E. Let H be a Hopf algebra with bijective antipode over a field k and suppose that R H is a bi-product. We use our results to describe two-cocycle twist bialgebra structures on the tensor product of bi-products. Show Context Citation Context Results here fit nicely into the discussion of [10]. We denote the antipode of a Hopf algebra H over k by S. Throughout k is a field and all vector spaces are over k. Radford , " The existence and uniqueness of integrals for finite-dimensional Hopf algebras was first established by Hopf modules; for a long time the only means known for doing so. In [2], [3] and [7] the existence and uniqueness of integrals for A is established without using Hopf modules. We find the approach of [3] very interesting in that it is based on a formalism which relates Hopf algebras and complete invariants of 3-manifolds in a rather intriguing way. This paper has two main purposes. The first is to explain the formalism of [3] to the extent that the proof of the existence and uniqueness of integrals for A found in [3] can be understood in more familiar algebraic terms. The reader is directed to [10] for a much fuller explanation of this formalism which includes a discussion of its subtleties and its connections with identities which Show Context Citation Context We shall assume that the reader has an elementary knowledge of Hopf algebras. Readers with a basic knowledge of Hopf algebras should find this paper virtually self contained. Throughout k is a field, A is a finite-dimensional Hopf algebra over k and all vec We outline a theory of quantum algebras and coalgebras and their resulting invariants of unoriented 1â€"1 tangles, knots and links, we outline a theory of oriented quantum algebras and coalgebras and their resulting invariants of oriented 1â€"1 tangles, knots and links, and we show how these a We outline a theory of quantum algebras and coalgebras and their resulting invariants of unoriented 1â€"1 tangles, knots and links, we outline a theory of oriented quantum algebras and coalgebras and their resulting invariants of oriented 1â€"1 tangles, knots and links, and we show how these algebras and coalgebras are related. Quasitriangular Hopf algebras are examples of quantum algebras and oriented quantum algebras; likewise coquasitriangular Hopf algebras are examples of quantum coalgebras and oriented quantum coalgebras. We assume that the reader has a basic knowledge of coalgebras and Hopf algebras. Yangâ€"Baxter algebras or coalgebras are integral parts of the al

## Chapter 2 : Coalgebra - Wikipedia

*The concept of Hopf algebras was first introduced in the theory of algebraic topology but in recent years has been developed by many mathematicians and applied to other areas of mathematics such as Lie groups, algebraic groups and Galois theory. This book is an introduction to the basic theory of.*

A locally compact quantum group analogue of. Woronowicz proved in that quantum SU 1,1 does not exist as a locally compact quantum group. The coassociativity of this comultiplication is the hardest result to establish. We define the Haar weight and obtain simple formulas for the antipode and its polar decomposition. We introduce a Hom-type generalization of quantum groups, called quasi-triangular Hom-bialgebras. A family of quasi-triang Each quasi-triangular Hom-bialgebra comes with a solution of the quantum Hom-Yang-Baxter equation, which is a non-associative version of the quantum Yang-Baxter equation. Solutions of the Hom-Yang-Baxter equation can be obtained from modules of suitable quasi-triangular Hom-bialgebras. Show Context Citation Context Frenkel, Naihuan Jing, Weiqiang Wang , " We establish a q-analog of our recent work on vertex representations and the McKay correspondence. The multiplication and comultiplication are given by the respective composition of the following maps: To any cleft Hopf Galois object, i. We completely work out these constructions in the case of the four-dimensional Sweedler algebra. We equip T XH with an H-comodule algebra structure with the coaction induced by 2. We recast basic topological concepts underlying differential geometry using the language and tools of noncommutative geometry. We introduce the concept of piecewise triviality In the context of principal actions, we study in detail an example of a non-proper free action with continuous translation map, and examples of compact principal bundles which are piecewise trivial but not locally trivial, and neither piecewise trivial nor locally trivial, respectively. We show that the module of continuous sections of a vector bundle associated to a compact principal bundle is a cotensor product of the algebra of functions defined on the total space that are continuous along the base and polynomial along the fibres with the vector space of the representation. On the algebraic side, we review the formalism of connections for the universal differential algebras. In the differential geometry framework, we consider smooth connections on principal bundles as equivariant splittings of the cotangent bundle, as 1-form-valued derivations of the algebra of smooth functions on the structure group, and as axiomatically given covariant differentiations of functions defined on the total space. Finally, we use the Dirac monopole connection to compute the pairing of the line bundles associated to the Hopf fibration with the cyclic cocycle of integration over S2. Contents Show Context Citation Context A topological space is called compact if out of any of its open cover Phys , " It is shown that the principle of locality and noncommutative geometry can be connnected by a sheaf theoretical method. In this framework quantum spaces are introduced and examples in mathematical physics are given. With the language of quantum spaces noncommutative principal and vector bundles are With the language of quantum spaces noncommutative principal and vector bundles are defined and their properties are studied. Important constructions in the classical theory of principal fibre bundles like associated bundles and differential calculi are carried over to the quantum case. At the end q-deformed instanton models are Powered by:

## Chapter 3 : CiteSeerX â€" Citation Query Hopf Algebras,â€¢ 74, Cambridge Tracts

*In mathematics, a Hopf algebra, named after Heinz Hopf, is a structure that is simultaneously an (unital associative) algebra and a (counital coassociative) coalgebra, with these structures' compatibility making it a bialgebra, and that moreover is equipped with an antiautomorphism satisfying a certain property.*

## Chapter 4 : Cambridge Tracts in Mathematics

*The existence and uniqueness of integrals for finite-dimensional Hopf algebras was first established by Hopf modules; for a long time the only means known for doing so. In [2], [3] and [7] the existence and uniqueness of integrals for A is established without using Hopf modules.*

## Chapter 5 : Cambridge Tracts in Mathematics: Hopf Algebras Series Number 74 : Eiiche Abe :

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## Chapter 6 : Hopf algebra - Wikipedia

*[28] Hazewinkel, M., Introductory recommendations for the study of Hopf algebras in mathematics and physics, CWI Quarterly, vol. 4 (), no. 1, Centre for Mathematics and Computer Science, Amsterdam.*

## Chapter 7 : Cambridge, Tracts in Mathematics (CTM) Books List | profhugodegaris

*This series is devoted to thorough, yet reasonably concise treatments of topics in any branch of mathematics. Typically, a Tract takes up a single thread in a wide subject, and follows its ramifications, thus throwing light on various of its aspects. Tracts are expected to be rigorous, definitive.*

## Chapter 8 : CiteSeerX â€" Citation Query algebras, Cambridge Tracts in

*Hopf Algebras, an Overview School of Mathematics and Computational Science Sun Yat-sen University Guangzhou, PRC January 22, David E. Radford The University of Illinois at Chicago.*

## Chapter 9 : AMS :: Proceedings of the American Mathematical Society

*Eiichi Abe, Hopf algebras, Cambridge Tracts in Mathematics, vol. 74, Cambridge University Press, Cambridge-New York, Translated from the Japanese by Hisae Kinoshita and Hiroko Tanaka.*