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Soggetti	Associative rings Associative algebras Manifolds (Mathematics) Algebras, Linear Topological groups Lie groups Mathematical physics Algebra, Homological Associative Rings and Algebras Manifolds and Cell Complexes Linear Algebra Topological Groups and Lie Groups Mathematical Physics Category Theory, Homological Algebra Àlgebres de Hopf Llibres electrònics
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Sommario/riassunto	This textbook provides a concise, visual introduction to Hopf algebras and their application to knot theory, most notably the construction of solutions of the Yang–Baxter equations. Starting with a reformulation of the definition of a group in terms of structural maps as motivation for

the definition of a Hopf algebra, the book introduces the related algebraic notions: algebras, coalgebras, bialgebras, convolution algebras, modules, comodules. Next, Drinfel'd's quantum double construction is achieved through the important notion of the restricted (or finite) dual of a Hopf algebra, which allows one to work purely algebraically, without completions. As a result, in applications to knot theory, to any Hopf algebra with invertible antipode one can associate a universal invariant of long knots. These constructions are elucidated in detailed analyses of a few examples of Hopf algebras. The presentation of the material is mostly based on multilinear algebra, with all definitions carefully formulated and proofs self-contained. The general theory is illustrated with concrete examples, and many technicalities are handled with the help of visual aids, namely string diagrams. As a result, most of this text is accessible with minimal prerequisites and can serve as the basis of introductory courses to beginning graduate students.
