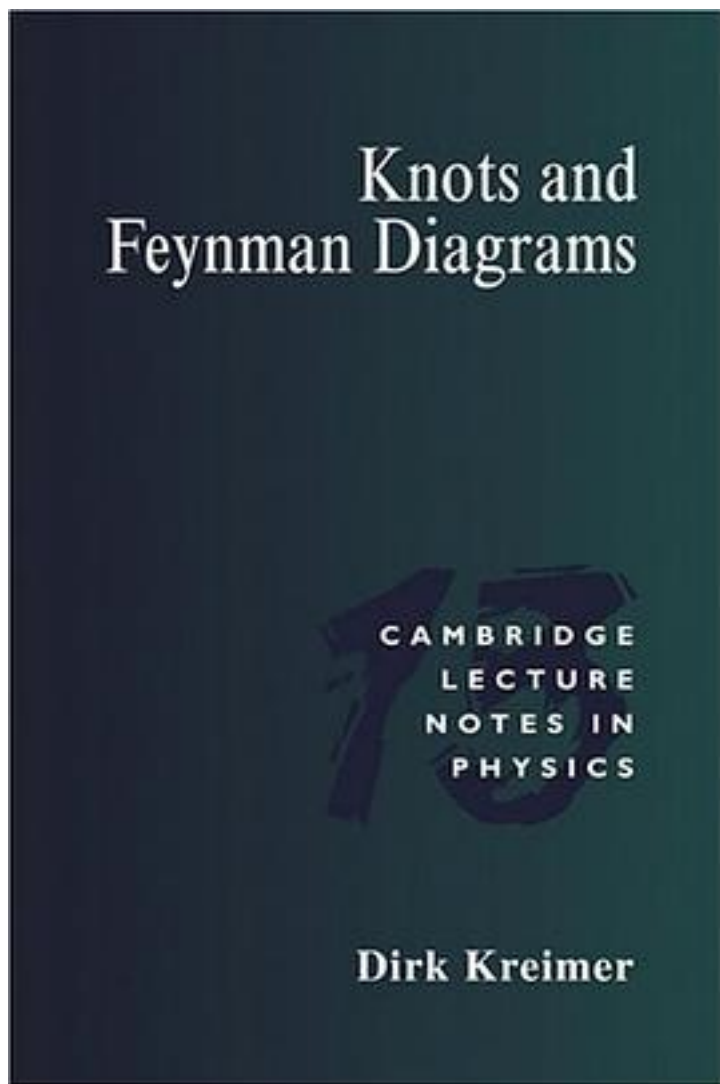


Knots and Feynman Diagrams



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This book provides an accessible and up-to-date introduction to how knot theory and Feynman diagrams can be used to illuminate problems in quantum field theory. Beginning with a summary of key ideas from perturbative quantum field theory and an introduction to the Hopf algebra structure of renormalization, early chapters discuss the rationality of ladder diagrams and simple link diagrams. The necessary basics of knot theory are then presented and the number-theoretic relationship between the topology of Feynman diagrams and knot theory is explored. Later chapters discuss four-term relations motivated by the discovery of Vassiliev invariants in knot theory and draw a link to algebraic structures recently observed in noncommutative geometry. Detailed references are included. Dealing with material at perhaps the most productive interface between mathematics and physics, the book will be of interest to theoretical and particle physicists, and mathematicians.

作者介绍:

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