

<<A Short Introduction>>

图书基本信息

书名：<<A Short Introduction to Quantum Information and Quantum Computation 量子信息与量子计算导论>>

13位ISBN编号：9780521860567

10位ISBN编号：0521860563

出版时间：2006-6

出版时间：Cambridge Univ Pr

作者：Le Bellac, Michel

页数：167

版权说明：本站所提供下载的PDF图书仅提供预览和简介，请支持正版图书。

更多资源请访问：<http://www.tushu007.com>

<<A Short Introduction>>

内容概要

Quantum information and computation is a rapidly expanding and cross-disciplinary subject. This book gives a self-contained introduction to the field for physicists, mathematicians and computer scientists who want to know more about this exciting subject. After a step-by-step introduction to the quantum bit (qubit) and its main properties, the author presents the necessary background in quantum mechanics. The core of the subject, quantum computation, is illustrated by a detailed treatment of three quantum algorithms: Deutsch, Grover and Shor. The final chapters are devoted to the physical implementation of quantum computers, including the most recent aspects, such as superconducting qubits and quantum dots, and to a short account of quantum information. Written at a level suitable for undergraduates in physical sciences, no previous knowledge of quantum mechanics is assumed, and only elementary notions of physics are required. The book includes many short exercises, with solutions available to instructors through solutions@cambridge.org.

<<A Short Introduction>>

书籍目录

Foreword Preface
1 Introduction
2 What is a qubit? 2.1 The polarization of light 2.2 Photon polarization 2.3 Mathematical formulation: the qubit 2.4 Principles of quantum mechanics 2.5 Quantum cryptography 2.6 Exercises 2.7 Further reading
3 Manipulating qubits 3.1 The Bloch sphere, spin 1/2 3.2 Dynamical evolution 3.3 Manipulating qubits: Rabi oscillations 3.4 Principles of NMR and MRI 3.5 Exercises 3.6 Further reading
4 Quantum correlations 4.1 Two-qubit states 4.2 The state operator (or density operator) 4.3 The quantum no-cloning theorem 4.4 Decoherence 4.5 The Bell inequalities 4.6 Exercises 4.7 Further reading
5 Introduction to quantum computing 5.1 General remarks 5.2 Reversible calculation 5.3 Quantum logic gates 5.4 The Deutsch algorithm 5.5 Generalization to $n \sim m$ qubits 5.6 The Grover search algorithm 5.7 The quantum Fourier transform 5.8 The period of a function 5.9 Classical algorithms and quantum algorithms 5.10 Exercises 5.11 Further reading
6 Physical realizations 6.1 NMR as a quantum computer 6.2 Trapped ions 6.3 Superconducting qubits 6.4 Quantum dots 6.5 Exercises 6.6 Further reading
7 Quantum information 7.1 Teleportation 7.2 Shannon entropy 7.3 von Neumann entropy 7.4 Quantum error correction 7.5 Exercises 7.6 Further reading
References
Index

<<A Short Introduction>>

版权说明

本站所提供下载的PDF图书仅提供预览和简介，请支持正版图书。

更多资源请访问:<http://www.tushu007.com>