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Autore	Gother John <d. 1704.>
Titolo	Instructions for apprentices and servants· [[electronic resource]]
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Altri autori (Persone)	BethThomas <1949-> LeuchsGerd
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Nota di contenuto	Quantum Information Processing 2., revised and enlarged Edition; Contents; Preface to the First Edition; Preface to the Second Edition; List of Contributors; 1 Algorithms for Quantum Systems - Quantum Algorithms; 1.1 Introduction; 1.2 Fast Quantum Signal Transforms; 1.3 Quantum Error-correcting Codes; 1.4 Efficient Decomposition of Quantum Operations into Given One-parameter Groups; 1.5 Simulation of Hamiltonians; References; 2 Quantum Information Processing and Error Correction with Jump Codes; 2.1 Introduction; 2.2 Invertible Quantum Operations and Error Correction 2.3 Quantum Error Correction by Jump Codes2.3.1 Spontaneous Decay and Quantum Trajectories; 2.3.2 Jump Codes; 2.4 Universal Quantum Gates in Code Spaces; 2.4.1 Universal Sets of Quantum Gates for Qudit-Systems; 2.4.2 Universal One-Qutrit Gates; 2.4.3 A Universal Entanglement Gate; 2.5 Summary and Outlook; References; 3

Computational Model for the One-Way Quantum Computer: Concepts and Summary; 3.1 Introduction; 3.2 The QC(C) as a Universal Simulator of Quantum Logic Networks; 3.3 Non-Network Character of the QC(C); 3.4 Computational Model; 3.5 Conclusion; References
4 Quantum Correlations as Basic Resource for Quantum Key Distribution4.1 Introduction; 4.2 Background of Classical Information Theoretic Security; 4.3 Link Between Classical and Quantum; 4.4 Searching for Effective Entanglement; 4.5 Verification Sets; 4.5.1 6-state Protocol; 4.5.2 4-state Protocol; 4.5.3 2-state Protocol; 4.6 Examples for Evaluation; 4.7 Realistic Experiments; 4.8 Conclusions; References; 5 Increasing the Size of NMR Quantum Computers; 5.1 Introduction; 5.2 Suitable Molecules; 5.3 Scaling Problem for Experiments Based on Pseudo-pure States; 5.4 Approaching Pure States 5.5 Scalable NMR Quantum Computing Based on the Thermal Density Operator5.6 Time-optimal Implementation of Quantum Gates; 5.7 Conclusion; References; 6 On Lossless Quantum Data Compression and Quantum Variable-length Codes; 6.1 Introduction; 6.2 Codes, Lengths, Kraft Inequality and von Neumann Entropy Bound; 6.2.1 The Codes; 6.2.2 Length Observable and Average Length of Codewords; 6.2.3 Kraft Inequality and von Neumann Entropy Bound; 6.2.4 Base Length; 6.3 Construct Long Codes from Variable-length Codes; 6.4 Lossless Quantum Data Compression, if the Decoder is Informed about the Base Lengths
6.5 Code Analysis Based on the Base Length6.6 Lossless Quantum Data Compression with a Classical Helper; 6.7 Lossless Quantum Data Compression for Mixed State Sources; 6.8 A Result on Tradeoff between Quantum and Classical Resources in Lossy Quantum Data Compression; References; 7 Entanglement Properties of Composite Quantum Systems; 7.1 Introduction; 7.2 Separability of Composite Quantum Systems; 7.2.1 The Separability Problem; 7.2.2 Results on The Separability Problem; 7.3 The Distillability Problem; 7.3.1 Results on the Distillability Problem
7.4 Witness Operators for the Detection of Entanglement

Sommario/riassunto

Quantum processing and communication is emerging as a challenging technique at the beginning of the new millennium. This is an up-to-date insight into the current research of quantum superposition, entanglement, and the quantum measurement process - the key ingredients of quantum information processing. The authors further address quantum protocols and algorithms. Complementary to similar programmes in other countries and at the European level, the German Research Foundation (DFG) started a focused research program on quantum information in 1999. The contributions - written by leading experts