1. Record Nr. UNISA996647971003316

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Titolo	A Student’s Guide to Quantum Computing / / by Stefano Olivares
Pubbl/distr/stampa	Cham : , : Springer Nature Switzerland : , : Imprint : Springer, , 2025
ISBN	9783031833618
Edizione	[1st ed. 2025.]
Descrizione fisica	1 online resource (352 pages)
Collana	Lecture Notes in Physics, , 1616-6361 ; ; 1038
Disciplina	530.12
Soggetti	Quantum theory Quantum computing Condensed matter Quantum Physics Quantum Information Condensed Matter Physics
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Nota di contenuto	Basic concepts of classical logic -- Elements of quantum mechanics -- Quantum mechanics as computation -- Universal computers and computational complexity -- The Quantum Fourier Transform and the factoring algorithm -- The quantum search algorithm -- Quantum operations -- Basics of quantum error correction -- Two-level systems and basics of QED.-Quantum computation with trapped ions -- Superconducting qubits charge and transmon qubit -- Quantum computation and adiabatic evolution.
Sommario/riassunto	This textbook provides a self-contained introduction to the principles and methods of quantum computation, designed for advanced undergraduate and graduate students. It introduces classical logic and quantum mechanics before presenting their integration in quantum computation. Key topics include quantum logic gates, foundational algorithms such as Deutsch-Jozsa and Bernstein-Vazirani, the quantum Fourier transform, and quantum search algorithms. Additional coverage includes quantum operations, error correction techniques, and physical implementations of quantum computation using technologies such as trapped ions and superconducting qubits. The book concludes with an examination of quantum computation through adiabatic evolution. The

text is supplemented with exercises, solutions, and practical examples to support learning and application. It serves as a foundational resource for students and researchers pursuing studies in quantum computing and related fields.