1.	Record Nr.	UNINA9910766891503321
	Titolo	Quantum computing : circuits, systems, automation and applications / / edited by Himanshu Thapliyal, Travis Humble
	Pubbl/distr/stampa	Cham : , : Springer, , [2024] ©2024
	ISBN	3-031-37966-7 9783031379666
	Descrizione fisica	1 online resource (290 pages) : illustrations
	Disciplina	006.3843
	Soggetti	Electronic circuits Quantum computing Embedded computer systems Electronic circuit design Electronic Circuits and Systems Quantum Information Embedded Systems Electronics Design and Verification
	Lingua di pubblicazione	Inglese
	Formato	Materiale a stampa
	Livello bibliografico	Monografia
	Nota di bibliografia	Includes bibliographical references and index.
	Nota di contenuto	Introduction to Quantum Computing -- Quantum Circuit Synthesis -- Quantum Arithmetic Circuits -- Quantum Resource Estimation -- Quantum Compiler and Programming Languages -- Validation and Testing in Quantum Computing -- Quantum Computing Security -- Applications of Quantum Computing to fields such as Quantum Chemistry, Linear Algebra, Scientific Applications, Material Science, Machine Learning, etc. -- Quantum Technologies: Superconducting, Trapped Ions, Spintronics, Cryogenic Electronics for Quantum Computing.
	Sommario/riassunto	This book provides readers with the current state-of-the-art research and technology on quantum computing. The authors provide design paradigms of quantum computing. Topics covered include multi-programming mechanisms on near-term quantum computing,

Lagrange interpolation approach for the general parameter-shift rule, architecture-aware decomposition of quantum circuits, software for massively parallel quantum computing, machine learning in quantum annealing processors, quantum annealing for real-world machine learning applications, queuing theory models for (Fault-Tolerant) quantum circuits, machine learning for quantum circuit reliability assessment, and side-channel leakage in Suzuki stack circuits. Describes the latest progress in quantum circuits and design automation; Discusses circuits and systems targeting novel and existing applications of quantum computing; Includes resource consumption estimates for quantum computing systems and applications.