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Titolo	Will We Ever Have a Quantum Computer? [[electronic resource] /] / by Mikhail I. Dyakonov
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Edizione	[1st ed. 2020.]
Descrizione fisica	1 online resource (XI, 49 p. 5 illus., 1 illus. in color.)
Collana	SpringerBriefs in Physics, , 2191-5423
Disciplina	500
Soggetti	Physics Quantum computers Spintronics Quantum physics Computer science Popular Science in Physics Quantum Information Technology, Spintronics Quantum Physics Quantum Computing Popular Computer Science
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Nota di bibliografia	Includes bibliographical references and index.
Nota di contenuto	Introduction -- Brief history of quantum computing, starting with the invention of Shor's algorithm (1994) -- Introduction to quantum mechanics for pedestrians -- Electron spin as a qubit -- The main ideas and promises of quantum computing -- Current state of the art.
Sommario/riassunto	This book addresses a broad community of physicists, engineers, computer scientists and industry professionals, as well as the general public, who are aware of the unprecedented media hype surrounding the supposedly imminent new era of quantum computing. The central argument of this book is that the feasibility of quantum computing in the physical world is extremely doubtful. The hypothetical quantum computer is not simply a quantum variant of the conventional digital computer, but rather a quantum extension of a classical analog

computer operating with continuous parameters. In order to have a useful machine, the number of continuous parameters to control would have to be of such an astronomically large magnitude as to render the endeavor virtually infeasible. This viewpoint is based on the author's expert understanding of the gargantuan challenges that would have to be overcome to ever make quantum computing a reality. Knowledge of secondary-school-level physics and math will be sufficient for understanding most of the text; the few paragraphs that are more technical are highlighted in italics.

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