Explorations in Quantum Computing (Texts in Computer Science)

Colin P. Williams

Explorations in Quantum Computing (Texts in Computer Science)

Colin P. Williams

Explorations in Quantum Computing (Texts in Computer Science) Colin P. Williams
By the year 2020, the basic memory components of a computer will be the size of individual atoms. At such scales, the current theory of computation will become invalid.

"Quantum computing" is reinventing the foundations of computer science and information theory in a way that is consistent with quantum physics - the most accurate model of reality currently known. Remarkably, this theory predicts that quantum computers can perform certain tasks breathtakingly faster than classical computers – and, better yet, can accomplish mind-boggling feats such as teleporting information, breaking supposedly "unbreakable" codes, generating true random numbers, and communicating with messages that betray the presence of eavesdropping.

This widely anticipated second edition of Explorations in Quantum Computing explains these burgeoning developments in simple terms, and describes the key technological hurdles that must be overcome to make quantum computers a reality. This easy-to-read, time-tested, and comprehensive textbook provides a fresh perspective on the capabilities of quantum computers, and supplies readers with the tools necessary to make their own foray into this exciting field.

Topics and features: concludes each chapter with exercises and a summary of the material covered; provides an introduction to the basic mathematical formalism of quantum computing, and the quantum effects that can be harnessed for non-classical computation; discusses the concepts of quantum gates, entangling power, quantum circuits, quantum Fourier, wavelet, and cosine transforms, and quantum universality, computability, and complexity; examines the potential applications of quantum computers in areas such as search, code-breaking, solving NP-Complete problems, quantum simulation, quantum chemistry, and mathematics; investigates the uses of quantum information, including quantum teleportation, superdense coding, quantum data compression, quantum cloning, quantum negation, and quantum cryptography; reviews the advancements made towards practical quantum computers, covering developments in quantum error correction and avoidance, and alternative models of quantum computation.

This text/reference is ideal for anyone wishing to learn more about this incredible, perhaps "ultimate," computer revolution.

Dr. Colin P. Williams is Program Manager for Advanced Computing Paradigms at the NASA Jet Propulsion Laboratory, California Institute of Technology, and CEO of Xtreme Energetics, Inc. an advanced solar energy company. Dr. Williams has taught quantum computing and quantum information theory as an acting Associate Professor of Computer Science at Stanford University. He has spent over a decade inspiring and leading high technology teams and building business relationships with and Silicon Valley companies. Today his interests include terrestrial and Space-based power generation, quantum computing, cognitive computing, computational material design, visualization, artificial intelligence, evolutionary computing, and remote olfaction. He was formerly a Research Scientist at Xerox PARC and a Research Assistant to Prof. Stephen W. Hawking, Cambridge University.
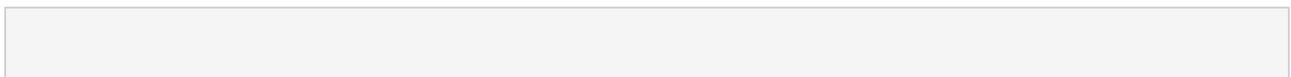
Download and Read Free Online Explorations in Quantum Computing (Texts in Computer Science) Colin P. Williams

---

From reader reviews:

Patricia Smith:

In this 21st one hundred year, people become competitive in every way. By being competitive at this point, people have do something to make these survives, being in the middle of often the crowded place and notice by means of surrounding. One thing that at times many people have underestimated it for a while is reading. Yeah, by reading a reserve your ability to survive enhance then having chance to endure than other is high. In your case who want to start reading some sort of book, we give you this particular Explorations in Quantum Computing (Texts in Computer Science) book as basic and daily reading reserve. Why, because this book is greater than just a book.

Richard Tipton:

Reading a guide can be one of a lot of exercise that everyone in the world enjoys. Do you like reading book thus. There are a lot of reasons why people love it. First reading a e-book will give you a lot of new facts. When you read a reserve you will get new information because book is one of several ways to share the information or maybe their idea. Second, examining a book will make you more imaginative. When you reading a book especially hype book the author will bring you to imagine the story how the characters do it anything. Third, it is possible to share your knowledge to others. When you read this Explorations in Quantum Computing (Texts in Computer Science), you could tells your family, friends and soon about yours reserve. Your knowledge can inspire different ones, make them reading a publication.

Douglas Henry:

People live in this new moment of lifestyle always try to and must have the extra time or they will get wide range of stress from both way of life and work. So , whenever we ask do people have time, we will say absolutely of course. People is human not really a huge robot. Then we inquire again, what kind of activity have you got when the spare time coming to an individual of course your answer will probably unlimited right. Then ever try this one, reading ebooks. It can be your alternative within spending your spare time, the book you have read is usually Explorations in Quantum Computing (Texts in Computer Science).

Victoria Owen:

Are you kind of stressful person, only have 10 or perhaps 15 minute in your time to upgrading your mind talent or thinking skill even analytical thinking? Then you have problem with the book than can satisfy your short space of time to read it because all of this time you only find book that need more time to be go through. Explorations in Quantum Computing (Texts in Computer Science) can be your answer because it can be read by anyone who have those short free time problems.

Download and Read Online Explorations in Quantum Computing (Texts in Computer Science) Colin P. Williams #2IAX3JPMODG

Read Explorations in Quantum Computing (Texts in Computer Science) by Colin P. Williams for online ebook

Explorations in Quantum Computing (Texts in Computer Science) by Colin P. Williams Free PDF d0wnl0ad, audio books, books to read, good books to read, cheap books, good books, online books, books online, book reviews epub, read books online, books to read online, online library, greatbooks to read, PDF best books to read, top books to read Explorations in Quantum Computing (Texts in Computer Science) by Colin P. Williams books to read online.

Online Explorations in Quantum Computing (Texts in Computer Science) by Colin P. Williams ebook PDF download

Explorations in Quantum Computing (Texts in Computer Science) by Colin P. Williams Doc

Explorations in Quantum Computing (Texts in Computer Science) by Colin P. Williams Mobipocket

Explorations in Quantum Computing (Texts in Computer Science) by Colin P. Williams EPub