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*The Quantum World
Featuring A New Section
Quantum Physics For
Everyone Featuring A
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Section Quantum
Questions

Philosophy of physics title by highly

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regarded author, fully revised for this
paperback edition.

Quantum Questions
In this largely nontechnical book, eminent
physicists and philosophers address the
philosophical impact of recent advances in
quantum physics. These are shown to shed
new light on profound questions about
realism, determinism, causality or locality.

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The participants contribute in the spirit of an open and honest discussion, reminiscent of the time when science and philosophy were inseparable. After the editors' introduction, the next chapter reveals the strangeness of quantum mechanics and the subsequent discussions examine our notion of reality. The spotlight is then turned to

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the topic of decoherence. Bohm's theory is critically examined in two chapters, and the relational interpretation of quantum mechanics is likewise described and discussed. The penultimate chapter presents a proposal for resolving the measurement problem, and finally the topic of loop quantum gravity is presented

Bookmark File PDF The Quantum World Quantum Physics For Everyone Featuring A New Section Quantum Questions Quantum by one of its founding fathers, Carlo Rovelli. The original presentations and discussions on which this volume is based took place under the auspices of the French “Académie des Sciences Morales et Politiques”. The book will appeal to everybody interested in knowing how our description of the world is impacted by the

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results of the most powerful and successful theory that physicists have ever built.

Understanding The Quantum World and Scientific History Science is truly one of the deepest, the most complex, and the most relevant forms of knowledge in human history. It deals with such aspects like life, energy, matter, and molecules.

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But even until now, the study of science has been based on empirical knowledge since the time of Galileo and this fact brings out the call for a deeper form of scientific research which leads to the quantum world. In his groundbreaking new picture book Language of Nature:

Quantum World Revealed, author David

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Judd Nutting presents to the world his views and in-depth study on science, nature and the world itself. Language of Nature begins with the task of explaining to its readers what the world of quantum physics is all about. Since science is based on knowledge derived from the five senses, researchers are unable to verify or

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demonstrate the quantum world which is actually transempirical. Quantum physics explains nature's selective process while the transempirical world of nature becomes a creative process, which experimental knowledge could never translate or explain effectively. Aside from presenting the quantum world, the book

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contains very rich information and photos on famous researchers (including Albert Einstein and Thomas Edison), technological development, scientific history, inventions, video games, the solar system and so much more. There is no doubt that readers will have so much to learn from the author s findings. Richly-

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layered, surprising and very intelligent,
Language of Nature is easily one of the
most educational and most unique picture
books about science today. Readers,
including students, researchers and
scientists, will enjoy immersing themselves
with this picture book, especially when it
comes to getting an acceptable

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Quantum World Revealed goes beyond conventional science and is truly an essential read!
In The Quantum Universe, Brian Cox and Jeff Forshaw approach the world of quantum mechanics in the same way they

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did in Why Does $E=mc^2$? and make fundamental scientific principles accessible—and fascinating—to everyone.

The subatomic realm has a reputation for weirdness, spawning any number of profound misunderstandings, journeys into Eastern mysticism, and woolly pronouncements on the interconnectedness

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of all things. Cox and Forshaw's
contention? There is no need for quantum
mechanics to be viewed this way. There is
a lot of mileage in the "weirdness" of the
quantum world, and it often leads to
confusion and, frankly, bad science. The
Quantum Universe cuts through the Wu Li
and asks what observations of the natural

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world made it necessary, how it was constructed, and why we are confident that, for all its apparent strangeness, it is a good theory. The quantum mechanics of The Quantum Universe provide a concrete model of nature that is comparable in its essence to Newton's laws of motion, Maxwell's theory of electricity and

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magnetism, and Einstein's theory of
relativity.

Interpreting the Quantum World

Quantum Worlds

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Our Quantum World and Reincarnation

The disturbing theory at the heart of reality

Mystical Writings of the World's Great

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Physicists

Alongside a thorough definition of basic concepts and their interrelations, backed by numerous examples, this textbook features a rare discussion of quantum mechanics and information theory combined in one text. It deals with

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important topics hardly found in regular textbooks, including the Robertson-Schrödinger relation, incompatibility between angle and angular momentum, "dispersed indeterminacy", interaction-free measurements, "submissive quantum mechanics", and many

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others. With its in-depth discussion of key concepts complete with problems and exercises, this book is poised to become the standard textbook for advanced undergraduate and beginning graduate quantum mechanics courses and an

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essential reference for physics
students and physics
professionals.

A daring new vision of quantum
theory from one of the leading
minds of contemporary physics
Quantum physics is the golden
child of modern science. It is the

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basis of our understanding of atoms, radiation, and so much else, from elementary particles and basic forces to the behavior of materials. But for a century it has also been the problem child of science: it has been plagued by intense disagreements between its

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inventors, strange paradoxes, and implications that seem like the stuff of fantasy. Whether it's Schrödinger's cat--a creature that is simultaneously dead and alive--or a belief that the world does not exist independently of our observations of it, quantum

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theory challenges our fundamental assumptions about reality. In Einstein's Unfinished Revolution, theoretical physicist Lee Smolin provocatively argues that the problems which have bedeviled quantum physics since its inception are unsolved and

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unsolvable, for the simple reason
that the theory is incomplete.

There is more to quantum physics,
waiting to be discovered. Our
task--if we are to have simple
answers to our simple questions
about the universe we live

in--must be to go beyond quantum

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mechanics to a description of the world on an atomic scale that makes sense. In this vibrant and accessible book, Smolin takes us on a journey through the basics of quantum physics, introducing the stories of the experiments and figures that have transformed our

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Myths For Everyone
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understanding of the universe,
before wrestling with the puzzles
and conundrums that the quantum
world presents. Along the way, he
illuminates the existing theories
that might solve these problems,
guiding us towards a vision of the
quantum that embraces common

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sense realism. If we are to have any hope of completing the revolution that Einstein began nearly a century ago, we must go beyond quantum mechanics to find a theory that will give us a complete description of nature. In Einstein's Unfinished Revolution,

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Lee Smolin brings us a step closer to resolving one of the greatest scientific controversies of our age. Quantum mechanics stands as one of the most remarkable achievements of the 20th century, providing startling insight into the nature of matter and a

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spectacularly successful predictive theory. However, while the predictive ability of the quantum theory has been rigorously tested time and again, so that it now satisfies any criterion of reliability as a tool of scientific inquiry, fundamental difficulties remain

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with its interpretation. The
Mystery of the Quantum World,
Second Edition introduces the
philosophical issues raised by the
success of the quantum theory and
lucidly outlines the different points
of view adopted by various
physicists striving to understand

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the meaning underlying the theories used every day. The author encourages you to see how the most successful of physical theories is relevant to issues outside physics. Revised and expanded, this edition includes a new chapter that introduces the

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most important of the recent
developments in quantum theory.

The authoritative selection of
topics ensures that readers
already familiar with the first
edition of the book will extend
their knowledge of quantum
theory, and those with no previous

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knowledge acquire an insight into
this fascinating world.

This reader-friendly, richly
illustrated book provides an
engaging overview of quantum
physics, from “big ideas” like
probability and uncertainty and
conservation laws to the behavior

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of quarks and photons and
neutrinos, and on to explanations
of how a laser works and why
black holes evaporate.

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Higher Consciousness
Six Impossible Things
Living in a Quantum Reality
Helgoland
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For those who have experienced a
transpersonal or spiritual

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Dark Night of the Soul

awakening, it can be difficult to come back to living in the day-to-day world. All of a sudden, you may be faced with challenges such as anxiety, depression, despair, the Dark Night of the Soul, and a multitude of other energetic and

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spiritual imbalances. Living in a
Quantum Reality helps to identify the
common side effects of wholeness
consciousness and offers a variety
of exercises, meditations, and
healing methods to cope with having
a higher consciousness in a world

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© Quantum Questions
that is still struggling to catch up.
Living in a Quantum Reality helps
you understand your "impossible"
transpersonal experiences by
integrating quantum physics into
psychology and offering a user-
friendly description of the many

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layers or spheres of energy and consciousness. This vision of the quantum self synthesizes spiritual thought with an array of scientific disciplines, and is supported by the author's own direct experiences, as well as her clients' experiences with

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larger reality. This book is a step toward advancing the field of psychology, and especially the practice of psychotherapy, to catch up with the latest, more quantum, worldview, one that is more comprehensive for understanding

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the reaches of our human
consciousness and psycho-spiritual
experiences. Quantum Questions Quantum

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This book presents winning and
shortlisted stories from past editions
of the international Quantum Shorts
competition. Inspired by the weird

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and wonderful world of quantum
physics, the shorts range from bold
imaginings of a quantum future to
contemplations rooted in the
everyday. They feature characters of
all sorts: lovers beginning their lives
together, an atom having an

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existential crisis, and, of course,
cats. These Quantum Shorts will
unleash in your mind a multiverse of
ideas.

"This century has seen the
development of technologies for
manipulating and controlling matter

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and light at the level of individual photons and atoms, a realm in which physics is fully quantum-mechanical. The dominant experimental technology is the laser, and the theoretical paradigm is quantum optics. The Quantum World of Ultra-

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Cold Atoms and Light is a trilogy,
which presents the quantum optics
way of thinking and its applications
to quantum devices. This book --
"Ultra-Cold Atoms" -- provides a
theoretical treatment of ultra-cold
Bosons and Fermions and their

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interactions with electromagnetic fields in a form consistent with the first two books in the trilogy. The book covers five main areas The physics of cold collisions, binding of atoms into molecules, and Feshbach resonances, Bose-Einstein

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condensation, at zero temperature, and at finite temperature, Quantum kinetic theory, Ultra-cold Fermions, Atoms in optical lattices. The central concept is the quantum stochastic paradigm, formulated for cold collision physics. For Bosons, this

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yields a suite of techniques; versions of the stochastic Gross-Pitaevskii equation, using which a wide range of dynamic and thermal properties are formulated. The eBook editions of the "Quantum World Trilogy" feature an extensive system of

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hyperlinks for ease of cross reference within the books, as well links to the other books in the trilogy. In the section Viewing the eBooks we explain how these links work, and give some advice on appropriate pdf viewer applications.

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For more information, please visit: <http://europe.worldscientific.com/quantum-world-of-ultra-cold-atoms-and-light.html>"

Decoherence, a concept known only to few physicists when the first edition appeared in 1996, has since

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become firmly established experimentally and understood theoretically, as well as widely reported in the literature. The major consequences of decoherence are the emergence of "classicality" in general, superselection rules, the

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border line between microscopic and macroscopic behavior in molecules and field theory, the emergence of classical spacetime, and the appearance of quantum jumps. The most important new developments in this rapidly evolving field are

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included in the second edition of this book, which has become a standard reference on the subject. All chapters have been thoroughly revised and updated. New fields of application now addressed span chaos theory, quantum information,

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neuroscience, primordial fluctuations
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in cosmology, black holes and string
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theory, experimental tests, and
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interpretational issues. While the
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major part of the book is concerned
with environmental decoherence
derived from a universal

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Schrödinger equation, later chapters address related or competing methods, such as consistent histories, open system dynamics, algebraic approaches, and collapse models.

Ultra-cold atoms

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The Disturbing Theory at the Heart
Of Reality Quantum Questions
God's Silent World

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**Offers a comprehensive and
up-to-date volume on the
conceptual and
philosophical problems
related to the interpretation
of quantum mechanics.**

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**Here is a collection of
writings that bridges the gap
between science and
religion. Quantum Questions
collects the mystical
writings of each of the major
physicists involved in the**

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**discovery of quantum
physics and relativity,
including Albert Einstein,
Werner Heisenberg, and
Max Planck. The selections
are written in nontechnical
language and will be of**

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**interest to scientists and
nonscientists alike.
Quantum mechanics is an
extraordinarily successful
scientific theory. It is also
completely mad. Although
the theory quite obviously**

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**works, it leaves us chasing
ghosts and phantoms;
particles that are waves and
waves that are particles; cats
that are at once both alive
and dead; and lots of
seemingly spooky goings-on.**

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**But if we're prepared to be a
little more specific about
what we mean when we talk
about 'reality' and a little
more circumspect in the way
we think a scientific theory
might represent such a**

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**reality, then all the mystery
goes away. This shows that
the choice we face is actually
a philosophical one. Here,
Jim Baggott provides a quick
but comprehensive
introduction to quantum**

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**mechanics for the general
reader, and explains what
makes this theory so very
different from the rest. He
also explores the processes
involved in developing
scientific theories and**

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**explains how these lead to
different philosophical
positions, essential if we are
to understand the nature of
the great debate between
Niels Bohr and Albert
Einstein. Moving forwards,**

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Baggott then provides a comprehensive guide to attempts to determine what the theory actually means, from the Copenhagen interpretation to many worlds and the multiverse.

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Quantum Questions

**Richard Feynman once
declared that 'nobody
understands quantum
mechanics'. This book will
tell you why.**

**Quantum Physics For
Dummies, Revised Edition**

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**helps make quantum physics
understandable and
accessible. From what
quantum physics can do for
the world to understanding
hydrogen atoms, readers will
get complete coverage of the**

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subject, along with numerous
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examples to help them
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tackle the tough
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equations. Compatible with
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courses, Quantum Physics
For Dummies, Revised

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**Edition lets students study
at their own paces and helps
them prepare for graduate
or professional exams.**

**Coverage includes: The
Schrodinger Equation and
its Applications The**

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**Foundations of Quantum
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Scattering Theory, Angular
Momentum, and more Your
plain-English guide to
understanding and working
with the micro world**

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**Quantum physics – also
called quantum mechanics
or quantumfield theory –
can be daunting for even the
most dedicatedstudent or
enthusiast of science, math,
or physics. This**

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**friendly, concise guide makes
this challenging subject
understandable
and accessible, from atoms to
particles to gases and
beyond. Plus, it's packed with
fully explained examples to**

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**help you tackle the
tricky equations like a pro!
Compatible with any
classroom course — study at
your own pace and prepare
for graduate or professional
exams Your journey begins**

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here — understand what
quantumphysics is and what
kinds of problems it can
solve Know the basic math —
from state vectors to
quantummatrix
manipulations, get the

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**foundation you need to
proceed Put quantum
physics to work — make
sense of Schrödinger's
equation and handle
particles bound in
squarewells and harmonic**

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**oscillators Solve problems in
three dimensions – use the
fulloperators to handle wave
functions and eigenvectors
to find thenatural wave
functions of a system**

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theories that aim to explain
the universe itself

Understanding the Quantum
World through Mathematical
Innovation

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**Surfing the Quantum World
Making Sense of the
Quantum Revolution
101 Quantum Questions
The Quest for the Real
Meaning of Quantum
Mechanics - a Game of**

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Theories

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**Why Everything You Thought
You Knew about Quantum
Physics Is Different**

*The laws governing the very small and
the very swift defy common sense and
stretch our minds to the limit. Drawing*

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on a deep familiarity with the
discoveries of the twentieth century,
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Ford gives an appealing account of
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quantum physics that will help the
serious reader make sense of a science
Featuring A New Section
that, for all its successes, remains
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mysterious.

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This monograph identifies the essential characteristics of the objects described by current quantum theory and considers their relationship to space-time. In the process, it explicates the senses in which quantum objects may be consistently considered to have

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*parts of which they may be composed
or into which they may be decomposed.*

*The book also demonstrates the degree
to which reduction is possible in*

quantum mechanics, showing it to be

*related to the objective indefiniteness
of quantum properties and the strong*

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non-local correlations that can occur between the physical quantities of quantum subsystems. Careful attention is paid to the relationships among such property correlations, physical causation, probability, and symmetry in quantum theory. In this way, the text

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Quantum Questions Quantum
*identifies and clarifies the conceptual
grounds underlying the unique nature
of many quantum phenomena.*

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*The ideas and phenomena of the
quantum world are strikingly unlike
those encountered in our visual world.*

This book shows why and how this is so

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via a gentle introduction to the principles of quantum theory. It is used to explain both ordinary microscopic phenomena like the structure of the Periodic Table of Elements and mind-bending phenomena.

Quantum physics has, on the one hand,

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drastically changed our theoretical description of the physical world and has, on the other hand, revolutionized everyday life, by allowing us to build lasers, atomic clocks used in GPS, and semiconductor-based devices such as laptop computers and smartphones.

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The object of this book is to give a self-contained introduction to both aspects.

It contains a detailed account of the foundational principles: superposition, entanglement, quantum non-locality, decoherence and measurement theory, and of some selected applications:

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quantum cryptography and quantum computers, cold atoms, light emitting and laser diodes, and atomic clocks.

The book is aimed at a general audience and the only prerequisite is a high-school background in mathematics.

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The Quantum World

Quantum Questions

*The Unfinished Quest for the Meaning
of Quantum Physics*

The Butterfly in the Quantum World

*The Quantum World Unveiled by
Electron Waves*

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The Theory of the Quantum World

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In this cleverly

conceived book,

physicist Robert Gilmore

makes accessible some

complex concepts in

quantum mechanics by

quantum mechanics by

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sending Alice to
Quantumland—a whole new
Wonderland, smaller than
an atom, where each
attraction demonstrates
a different aspect of
quantum theory. Alice

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unusual encounters,
Featuring A New Section
enhanced by
Quantum Questions Quantum
illustrations by Gilmore
Physics For Everyone
himself, make the
Featuring A New Section
Uncertainty Principle,
Quantum Questions
wave functions, the
Pauli Principle, and

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other elusive concepts
easier to grasp.

Quantum Questions. Quantum
Physics For Everyone
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Quantum Questions

“Jean Paul Corriveau’s A
Personal Journey into
the Quantum World is an
ambitious examination of
a number of scientific

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Physics For Everyone
ideas. The book is
Featuring A New Section
intelligent and well
Quantum Questions Quantum
written and a prodigious
Physics For Everyone
accomplishment.”

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—BlueInk Review “Through
Quantum Questions
a précis of basic
physics and quantum

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physics, Jean Paul
Corriveau's A Personal
Journey into the Quantum
World presents his own
unified theory. Many of
the ideas he presents
are original and

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exciting.” —Clarion

Review “Equal parts

Quantum Questions Quantum
physics and philosophy,

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Corriveau’s text aims at

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demystifying the

Quantum Questions

theories of quantum

reality and relativity.

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Quantum Questions
It makes for a varied
and enjoyable read that
will likely provoke much
thought and discussion
and delight readers."

-Kirkus Review

Helps the serious reader

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make sense of the
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mysterious science of
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quantum physics,
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covering the key
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discoveries of the
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twentieth century, such
as granularity, the

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uncertainty principle,
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and superposition and
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entanglement, among
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other important topics.
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This book emphasizes the
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experimental aspects of
the author's own

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laboratory. Instead of
merely presenting a dry
collection of knowledge,
the author unfolds to
the readers his vivid
experiences of
enthusiasm, sheer

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pleasure, and yet
frustrations in the
course of his own
research. In this way,
the book aims to arouse
the reader's curiosity
in the strange behaviors

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of electrons in the
microscopic world, which
differ significantly
from our common sense
and daily experiences of
the macroscopic world.

The fields of physics

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explored in the book are

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quantum mechanics,

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superconductivity,

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electron microscopy,

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holography, magnetism,

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and unified theory –

areas of the author's

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accompanied by many
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colorful illustrations
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that delight the senses
Featuring A New Section
and captivate the
Quantum Questions
imagination.

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of ForceWhat are
Waves?Interfering

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ElectronsElectron

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HolographyCoherent

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Electron Beams

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Developed!Wave-Particle

DualityInterference

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Microscopic

WorldAharonov-Bohm
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EffectVector Potentials,

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Undergraduates and
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in applied physics,
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condensed matter
physics, general

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physics, optics,
materials science and
engineering &
electronics.

keywords:Wave Particle

Duality;Electron Interfe

rence;Aharonov-Bohm

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Effect; Vortex; Flux Pinnin
g; Superconductor; Field-
Emission Electron
Lorentz

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Microscopy; Magnetic
Lines of Force; Magnetic
Domain Structure "This

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beautifully produced and
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sensitively written
Quantum Questions Quantum
volume takes us from the
Physics For Everyone
most elementary notions
Featuring A New Section
of waves to the most
Quantum Questions
perplexing features of
the quantum world in the

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most transparent prose i
maginable." Ultramicroscop
py

What Is Real?

Einstein's Unfinished
Revolution

Management in the

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Quantum World Revealed

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***Explains how scientists
discovered the different***

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***qualities of the smaller-
than-an-atom world,
including particles and
waves, ripple patterns,
interference patterns,
and the theory that the
universe is the most***

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Physics For Everyone
**powerful Bose-Einstein
condensate.**

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**This book presents a
comprehensive
explanation of the main
ideas and principles of
atomic and nuclear**

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***physics and quantum
mechanics. The author
invites readers to plunge
into the physics of micro-
objects and to take a
fascinating tour of the
world of atoms and***

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***nuclei. The main
questions under
consideration are the
structure of atoms,
atomic nuclei, the
substance and
systematics of***

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***elementary particles, the
processes of the creation
of atomic nuclei and the
evolution of stars as well
as different applied
aspects of the physics of
micro-objects.***

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***The Quantum
World Quantum Physics
for Everyone Harvard
University Press***

***“Anyone who is not
shocked by quantum
theory has not***

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***understood it.” Since
Niels Bohr said this many
years ago, quantum
mechanics has only been
getting more shocking.
We now realize that it’s
not really telling us that***

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***“weird” things happen
out of sight, on the
tiniest level, in the
atomic world: rather,
everything is quantum.
But if quantum mechanics
is correct, what seems***

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***obvious and right in our
everyday world is built on
foundations that don't
seem obvious or right at
all—or even possible. An
exhilarating tour of the
contemporary quantum***

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**landscape, Beyond Weird
is a book about what
quantum physics really
means—and what it
doesn't. Science writer
Philip Ball offers an up-to-
date, accessible account**

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Quantum Questions
***of the quest to come to
grips with the most
fundamental theory of
physical reality, and to
explain how its
counterintuitive
principles underpin the***

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***world we experience.
Over the past decade it
has become clear that
quantum physics is less a
theory about particles
and waves, uncertainty
and fuzziness, than a***

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***theory about information
and knowledge—about
what can be known, and
how we can know it.
Discoveries and
experiments over the
past few decades have***

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Quantum Questions
***called into question the
meanings and limits of
space and time, cause
and effect, and,
ultimately, of knowledge
itself. The quantum world
Ball shows us isn't a***

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***different world. It is our
world, and if anything
deserves to be called
“weird,” it’s us.***

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Physics For Everyone
***An Allegory of Quantum
Physics***

Language of Nature

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***Decoherence and the
Appearance of a Classical
World in Quantum Theory
The Mystery of the
Quantum World
The Search for What Lies
Beyond the Quantum***

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Quantum Shorts

*Ever since 1911, the Solvay
Conferences have shaped
modern physics. The 25th
edition held in October 2011
in Brussels and chaired by
David Gross continued this*

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***tradition and celebrated the
first centennial of this
illustrious series of
conferences. The
development and
applications of quantum
mechanics have always been***

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***the main threads in the
history of the Solvay
Conferences, hence the 25th
Solvay conference gathered
many of the leading figures
working on a wide variety of
profound problems in***

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***physics where quantum
mechanical effects play a
central role. The conference
addressed some of the most
pressing open questions in
the field of physics. The
proceedings contain the OC***

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***rapporteur talks OCO which
give a broad overview with
unique insights by
distinguished and renowned
scientists. These lectures
cover the seven sessions: OC
History and Reflections OCO,***

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***OC Foundations of Quantum
Mechanics and Quantum
ComputationOCO, OC
Control of Quantum
SystemsOCO, OC Quantum
Condensed MatterOCO, OC
Particles and FieldsOCO, OC***

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***Quantum Gravity and String
Theory*** ***OCO*** and it ended
***with a general discussion
attempting to arrive at a
synthesis. In the Solvay
tradition, the proceedings
also include the prepared***

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***comments to the rapporteur
talks. The discussions
among the participants OCo
some of which quite lively
and involving dramatically
divergent points of view OCo
have been carefully edited***

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and are reproduced in full.

A concise and engaging

investigation of six

interpretations of quantum

physics. Rules of the

quantum world seem to say

that a cat can be both alive

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***and dead at the same time
and a particle can be in two
places at once. And that
particle is also a wave;
everything in the quantum
world can described in terms
of waves—or entirely in***

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terms of particles. These interpretations were all established by the end of the 1920s, by Erwin Schrödinger, Werner Heisenberg, Paul Dirac, and others. But no one has yet

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***come up with a common
sense explanation of what is
going on. In this concise and
engaging book,
astrophysicist John Gribbin
offers an overview of six of
the leading interpretations***

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***of quantum mechanics.
Gribbin calls his account
“agnostic,” explaining that
none of these interpretations
is any better—or any
worse—than any of the
others. Gribbin presents the***

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***Copenhagen Interpretation,
promoted by Niels Bohr and
named by Heisenberg; the
Pilot-Wave Interpretation,
developed by Louis de
Broglie; the Many Worlds
Interpretation (termed***

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***“excess baggage” by
Gribbin); the Decoherence
Interpretation
 (“incoherent”); the
Ensemble “Non-
Interpretation”; and the
Timeless Transactional***

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Interpretation (which theorized waves going both forward and backward in time). All of these interpretations are crazy, Gribbin warns, and some are more crazy than others—but

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*in the quantum world, being
more crazy does not
necessarily mean more
wrong.*

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*Forget everything you
thought you knew about
reality. The world is a*

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seriously bizarre place.

Things can exist in two

places at once and travel

backwards and forwards in

time. Waves and particles

are one and the same, and

objects change their

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***behaviour according to
whether they are being
watched. This is not some
alternative universe but the
realm of the very small,
where quantum mechanics
rules. In this weird world of***

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***atoms and their
constituents, our common
sense understanding of
reality breaks down - yet
quantum mechanics has
never failed an experimental
test. What does it all mean?***

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***For all its weirdness,
quantum mechanics has
given us many practical
technologies including
lasers and the transistors
that underlie computers and
all digital technology. In the***

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***future, it promises
computers more powerful
than any built before, the
ability to communicate with
absolute privacy, and even
quantum teleportation. The
Quantum World explores the***

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***past, present and future of
quantum science, its
applications and mind-
bending implications.
Discover how ideas from
quantum mechanics are
percolating out into the vast***

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***scale of the cosmos -
perhaps, in the future, to
reveal a new understanding
of the big bang and the
nature of space and time.***

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accessible entry points to
the most important subjects
in science; subjects that
challenge, attract debate,
invite controversy and
engage the most enquiring***

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***minds. Designed for curious
readers who want to know
how things work and why,
the Instant Expert series
explores the topics that
really matter and their
impact on individuals,***

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***society, and the planet,
translating the scientific
complexities around us into
language that's open to
everyone, and putting new
ideas and discoveries into
perspective and context.***

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***Butterfly in the Quantum
World by Indu Satija, with
contributions by Douglas
Hofstadter, is the first book
ever to tell the story of the
"Hofstadter butterfly", a
beautiful and fascinating***

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***graph lying at the heart of
the quantum theory of
matter. The butterfly came
out of a simple-sounding
question: What happens if
you immerse a crystal in a
magnetic field? What***

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***energies can the electrons
take on? From 1930
onwards, physicists
struggled to answer this
question, until 1974, when
graduate student Douglas
Hofstadter discovered that***

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***the answer was a graph
consisting of nothing but
copies of itself nested down
infinitely many times. This
wild mathematical object
caught the physics world
totally by surprise, and it***

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***continues to mesmerize
physicists and
mathematicians today. The
butterfly plot is intimately
related to many other
important phenomena in
number theory and physics,***

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***including Apollonian
gaskets, the Foucault
pendulum, quasicrystals, the
quantum Hall effect, and
many more. Its story reflects
the magic, the mystery, and
the simplicity of the laws of***

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***nature, and Indu Satija, in a
wonderfully personal style,
relates this story, enriching
it with a vast number of
lively historical anecdotes,
many photographs, beautiful
visual images, and even***

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*poems, making her book a
great feast, for the eyes, for
the mind and for the soul.*

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*Deep Beauty
This Strange Quantum
World & You*

(And Why Anything That Can

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Beyond Weird

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As Kenneth W. Ford shows us in

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The Quantum World, the laws governing the very small and the very swift defy common sense and stretch our minds to the limit.

Drawing on a deep familiarity with the discoveries of the twentieth century, Ford gives an appealing

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account of quantum physics that will help the serious reader make sense of a science that, for all its successes, remains mysterious. In order to make the book even more suitable for classroom use, the author, assisted by Diane

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also a cloth edition of this book,
which does not include the
Quantum Questions included in
this paperback edition.

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This book sets forth a thoroughly
researched and tightly reasoned
original thesis. It is a convincing

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argument that one scientifically
proven fact is quite possibly
explained by another, though on
the surface one may appear to
have nothing to do with the other.
One fact is the solid evidence,
scientifically adduced by Dr. Jan

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Stevenson and others, that memories and other mental aspects of the human brain do indeed survive death. The other fact, accepted by almost all physicists, is a certain aspects of quantum mechanics known as

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entanglement. Entanglement is the relationship that develops between atoms, usually between those close in space, whereby certain characteristics of one atom complement the corresponding characteristics of

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the other. Atoms, of course, is what we and everything else are made of. Thereupon the distances between atoms does not matter. A change in one means a change in the other, simultaneously, though they may be millions of miles or of

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light years distant. Further, the projected life of atoms is over a billion times the projected life of our solar system. This book weaves flawlessly, based on the present state of scientific knowledge, the possible

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relationship between the two
disciplines.

Quantum Questions, Quantum
Physics For Everyone,
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Just how real is reality, anyway?
Forget everything you thought
you knew about reality. The world
is a seriously bizarre place. Things
can exist in two places at once

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of the very small, where quantum
mechanics rules. In this weird
world of atoms and their
constituents, our common sense
understanding of reality breaks
down - yet quantum mechanics
has never failed an experimental

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test. What does it all mean? For all its weirdness, quantum mechanics has given us many practical technologies including lasers and the transistors that underlie computers and all digital technology. In the future, it

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promises computers more
powerful than any built before,
the ability to communicate with
absolute privacy, and even
quantum teleportation. The
Quantum World explores the past,
present and future of quantum

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science, its applications and mind-
bending implications. Discover
how ideas from quantum
mechanics are percolating out
into the vast scale of the cosmos -
perhaps, in the future, to reveal a
new understanding of the big

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bang and the nature of space and
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definitive and accessible entry
points to the most important
subjects in science; subjects that
challenge, attract debate, invite

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controversy and engage the most
enquiring minds. Designed for
curious readers who want to know
how things work and why, the
Instant Expert series explores the
topics that really matter and their
impact on individuals, society, and

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the planet, translating the
scientific complexities around us
into language that's open to
everyone, and putting new ideas
and discoveries into perspective
and context.

The untold story of the heretical

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thinkers who dared to question
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the nature of our quantum
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universe Every physicist agrees
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quantum mechanics is among
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humanity's finest scientific
Quantum Questions
achievements. But ask what it
means, and the result will be a

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brawl. For a century, most
physicists have followed Niels
Bohr's Copenhagen interpretation
and dismissed questions about the
reality underlying quantum
physics as meaningless. A
mishmash of solipsism and poor

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ministry of the Church of
England, and he is now an
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describes a theory that

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