

Free reading 50 physics ideas you really need to know joanne baker [PDF]

50 Physics Ideas You Really Need to Know 50 Quantum Physics Ideas You Really Need to Know The Physics Book The Biggest Ideas in the Universe 1 50 Ideas You Really Need to Know: Universe The Big Ideas in Physics and How to Teach Them 50 Ideas You Really Need to Know Simply Quantum Physics Quantum Physics for Beginners Quantum Physics for Beginners Questioning the Universe Concepts, Strategies and Models to Enhance Physics Teaching and Learning The Trouble with Physics Physics, Fun, and Beyond Physics for You Instant Physics Quantum Physics for Babies (0-3) The Calculus Lifesaver The World According to Physics A History of the Ideas of Theoretical Physics The Quantum Theory—Origins and Ideas Great Ideas in Physics Beyond the Dynamical Universe Einstein's Unfinished Revolution 100 Most Important Science Ideas Quantum Aspects of Life Head First Physics Physics Squared Seven Fundamental Concepts in Spacetime Physics An Introduction to Mechanics The Order of Time 30-Second Quantum Theory History and Evolution of Concepts in Physics Teach Yourself Physics Beyond Weird Basic Physics Seven Brief Lessons on Physics What You Should Know About Physics 50 Science Ideas You Really Need to Know Social Physics

50 Physics Ideas You Really Need to Know

2022-08-18

in a series of 50 accessible essays joanne baker introduces and explains the fundamental physical concepts and laws that govern the inner workings of our universe from newton's law of gravitation to black holes schrödinger's cat to chaos theory 50 physics ideas you really need to know is a complete introduction to the most important physics concepts in history

50 Quantum Physics Ideas You Really Need to Know

2023-05-05

in a series of 50 accessible essays joanne baker introduces and explains the fundamental physical concepts and laws that govern the inner workings of our universe from schrodinger's cat to einstein's theory of relativity energy conservation to speed of light 50 quantum physics ideas you really need to know is a complete introduction to the most important quantum physics concepts in history

The Physics Book

2020-03-05

explore the laws and theories of physics in this accessible introduction to the forces that shape our universe our planet and our everyday lives using a bold graphic led approach the physics book sets out more than 80 key concepts and discoveries that have defined the subject and influenced our technology since the beginning of time with the focus firmly on unpicking the thought behind each theory as well as exploring when and how each idea and breakthrough came about seven themed chapters examine the history and developments in areas such as energy and matter and electricity and magnetism as well as quantum nuclear and particle physics eureka moments abound from pythagoras's observations of the pleasing harmonies created by vibrating strings and galileo's experiments with spheres to isaac newton's apple and his conclusions about gravity and the laws of motion you'll also learn about albert einstein's insights into relativity how the accidental discovery of cosmic microwave background radiation confirmed the big bang theory the search for the higgs boson particle and why most of our universe is missing if you've ever wondered exactly how physicists formulated and proved these abstract concepts the physics book is the book for you

The Biggest Ideas in the Universe 1

2022-09-15

the new york times bestseller sean carroll has achieved something i thought impossible a bridge between popular science and the mathematical universe of working physicists

magnificent brian clegg author of ten days in physics that shook the world immense strange and infinite the world of modern physics often feels impenetrable to the undiscerning eye a jumble of muons gluons and quarks impossible to explain without several degrees and a research position at cern but it doesn't have to be this way allow world renowned theoretical physicist and bestselling author sean carroll to guide you through the biggest ideas in the universe elegant and simple carroll unravels this web of theories and formulae equation by equation getting to the heart of the truths they represent in space time and motion the first book of this landmark trilogy carroll delves into the core of classical physics from euclid to einstein space time and motion explores the ideas which revolutionised science and forever changed our understanding of our place in the cosmos

50 Ideas You Really Need to Know: Universe

2011-09-29

for millennia humanity has gazed in wonder at the night sky tracked the motions of the planets and attempted to explain our place in the universe but only in our own time has the true scale the astonishing variety and the remarkable strangeness of the cosmos come clearly into focus the pace and sophistication of recent scientific discovery has been breathtaking but breakthroughs are often difficult to understand and their impact is hard to fully appreciate in 50 ideas you really need to know universe joanne baker clearly and concisely explains all of the essential concepts major discoveries and the very latest thinking in astrophysics including the basic principles of astronomy from heliocentrism to newton's theory of optics the constituent parts of the universe its creation and evolution the key concepts of cosmology including the theory of relativity supermassive black holes and multiverses the very latest developments in our understanding of quasars exoplanets and astrobiology from dwarf planets to dark energy and from the big bang to the death of stars this book is the perfect introduction to the cutting edge science that is shaping our understanding of our place in the universe and that could lead to the next great discovery the detection of life beyond earth

The Big Ideas in Physics and How to Teach Them

2018-04-18

the big ideas in physics and how to teach them provides all of the knowledge and skills you need to teach physics effectively at secondary level each chapter provides the historical narrative behind a big idea explaining its significance the key figures behind it and its place in scientific history accompanied by detailed ready to use lesson plans and classroom activities the book expertly fuses the what to teach and the how to teach it creating an invaluable resource which contains not only a thorough explanation of physics but also the applied pedagogy to ensure its effective translation to students in the classroom including a wide range of teaching strategies archetypal assessment questions and model answers the book tackles misconceptions and offers succinct and simple explanations of complex topics each of the five big ideas in physics are covered in detail electricity forces energy particles the universe aimed at new and trainee physics teachers particularly non specialists this book provides the knowledge and skills you need to teach physics successfully at secondary

level and will inject new life into your physics teaching

50 Ideas You Really Need to Know

2012

what exactly is a credit crunch why do footballers earn so much more than the rest of us which country is likely to be the world's leading economy in 10 years time daily telegraph economics editor edmund conway introduces and explains the central ideas of economics in a series of fifty essays beginning with an exploration of the basic theories such as adam smith's invisible hand and concluding with the latest research into the links between wealth and happiness he sheds light on all the essential topics needed to understand booms and busts bulls and bears and the way the world really works

Simply Quantum Physics

2021-02-04

discovering quantum physics has never been easier combining bold graphics with easy to understand text simply quantum physics is an essential introduction to the subject for those who are short of time but hungry for knowledge it is a perfect beginner's guide to the strange and fascinating world of subatomic physics that at times seems to conflict with common sense covering more than 100 key ideas from the basics of quantum mechanics to the uncertainty principle and quantum tunnelling it is divided into pared back single or double page entries that explain concepts simply and visually assuming no previous knowledge of physics simply quantum physics demystifies some of the most groundbreaking ideas in modern science and introduces the work of some of the most famous physicists of the 20th and 21st centuries including albert einstein neils bohr erwin schrödinger and richard feynman whether you are studying physics at school or college or simply want a jargon free overview of the subject this essential guide is packed with everything you need to understand the basics quickly and easily

Quantum Physics for Beginners

2020-10-24

how does the universe and the rules that make it up work it's a question that we've all asked ourselves at least once in our lives and you are you ready to find out you're probably thinking it's too complicated it's going to take too long to figure it out well i'm glad to give you some good news thanks to this book you can easily discover everything you need to know about this topic your best friends for this trip will be two a mind awake and open to new knowledge a lot of desire to learn you see the real difficulty in learning quantum physics is to accept everything you're going to be told ordinary people argue mistakenly that quantum physics is a topic that only scientists have access to the reality is another thing though anyone can learn these concepts even if their level of knowledge is less than zero start thinking to yourself that there is no such thing as nothing you can't do or learn none i want you to take three minutes right now and try to imagine how you would feel if

you could understand all the crazy ideas of the greatest revolutionary scientists i want to give you an advance it will be so fantastic that you will wonder how you lived until now without knowing these extraordinary laws of the infinity that surrounds us after a short time from the end of this book you can finally apply all the concepts you have learned in this book you can learn and apply the following topics the basics of quantum physics the basics of quantum mechanics reality vs quantum mechanics universe and quantum mechanics the 12 spiritual laws of the universe what is the law of attraction how to use the law of attraction money and the law of attraction happiness and the law of attraction meditation and the law of attraction and much more i guess now you can't wait to get started if your answer is yes start your journey

Quantum Physics for Beginners

2020-07-14

are you looking for a useful guide to help you understand the most interesting concepts of quantum physics the law of attraction and the theory of relativity if yes then keep reading in this book we've done our best to explain the most interesting and common concepts of quantum physics to arm the reader with useful and desirable knowledge whether you're reading for self-betterment understanding or bragging rights if we do our job correctly the reader will emerge with a newfound understanding of the workings of the universe and everything around us this guide contains information about quantum physics and the way of understanding the aspects of physics and other stuff like particles waves and light even though classical physics came first quantum physics can be used to explain most of the classical physics phenomena on a large scale the book came into existence to establish a firm intellectual basis for the foundation of qp for those among the masses who are not necessarily professional physicists but who nevertheless are willing to make an effort to go beyond fairytales only once the non-experts know what qp is about can they safely distinguish and discriminate between a serious scientific claim and more or less pseudo-scientific fantasy our guide is intended for anyone that ever asked the fundamental question why during science class and received an answer that was not very satisfying or it was not answered at all questioning thoughts and ideas is what leads to human progress this book covers the first quantum concept max planck the father of quantum physics einstein's relativity the law of attraction causality in quantum physics quantum mechanics and general relativity incompatibility and much more ready to get started click buy now

Questioning the Universe

2008-12-16

winner 2009 choice award outstanding academic title the typical introduction to physics leaves readers with the impression that physics is about 30 different unconnected topics such as motion forces gravity electricity light heat energy and atoms more often than not these readers are left to conclude that physics is mostly about boring

Concepts, Strategies and Models to Enhance Physics Teaching and Learning

2019-07-24

this book discusses novel research on and practices in the field of physics teaching and learning it gathers selected high quality studies that were presented at the girep icpe epec 2017 conference which was jointly organised by the international research group on physics teaching girep european physical society physics education division and the physics education commission of the international union of pure and applied physics iupap the respective chapters address a wide variety of topics and approaches pursued in various contexts and settings all of which represent valuable contributions to the field of physics education research examples include the design of curricula and strategies to develop student competencies including knowledge skills attitudes and values workshop approaches to teacher education and pedagogical strategies used to engage and motivate students this book shares essential insights into current research on physics education and will be of interest to physics teachers teacher educators and physics education researchers around the world who are working to combine research and practice in physics teaching and learning

The Trouble with Physics

2008-02-28

the trouble with physics is a groundbreaking account of the state of modern physics of how we got from einstein and relativity through quantum mechanics to the strange and bizarre predictions of string theory full of unseen dimensions and multiple universes lee smolin not only provides a brilliant layman s overview of current research as we attempt to build a theory of everything but also questions many of the assumptions that lie behind string theory in doing so he describes some of the daring outlandish ideas that will propel research in years to come

Physics, Fun, and Beyond

2005-08-02

the best magic is that which involves absolutely no sleight of hand only the unexpected yet natural workings of nature physics fun and beyond is chock full of just this kind of magic simple yet fascinating experiments easy to follow and colorful drawings and fun facts simply wonderful roald hoffmann 1981 nobel prize laureate in chemistry pure fun pure excitement you ve never learned physics like this before physics is pure excitement nothing s more fun than discovering how the world works and exploring its many possibilities with physics fun and beyond you ll grab the universe in your own two hands as you build more than 110 projects that uncover the physics beneath everyday life most of these projects are amazingly easy to build all you ll need are your everyday household tools and cheap sometimes even free materials from wind tunnels to flying saucers you ll learn exactly how to safely build

these experiments why they work and what they mean learn about all this and more step on eggs without breaking them and understand the principles of material strength build the magic can that teaches you about the different kinds of energy discover why the earth isn't exactly round learn more about gravity with the astronaut in the elevator experiment use pendulums to visualize radio tv frequencies and broadcasting feel pressure by sitting on a bed of nails build hydraulic robots to discover how you can transmit and amplify forces construct wings and wind tunnels that show why airplanes fly learn about optics by making bottles invisible recreate the sun and sky to realize why the sky is blue demonstrate the greenhouse effect with a homemade solar heater get water to climb walls as you understand cohesion and adhesion build wireless phones that capture sound and make acoustics fun create simple motors that display the basics of electromagnetism physics fun and beyond is for kids teenagers teachers parents homeschoolers everyone from 10 to 100 with curiosity and a passion for discovery and new challenges copyright pearson education all rights reserved

Physics for You

2001

the most popular series for gcse has been updated to offer comprehensive coverage of the revised gcse specifications physics for you has been updated in line with the revised national curriculum requirements

Instant Physics

2021-08-19

instant physics pulls together all the pivotal physics knowledge and thought into one concise volume each page contains a discrete cheat sheet which tells you the most important facts in bite sized chunks meaning you can become an expert in an instant from black holes to black body radiation telescopes to microscopes quantum mechanics to general relativity every key figure discovery or idea is explained with succinct and lively text and graphics perfect for the knowledge hungry and time poor this collection of graphic led lessons makes psychology interesting and accessible everything you need to know is here

Quantum Physics for Babies (0-3)

2017-05-01

ages 0 to 3 years quantum physics for babies by chris ferrie is a colourfully simple introduction to the principle that gives quantum physics its name baby will find out that energy is quantized and the weird world of atoms never comes to a standstill it is never too early to become a quantum physicist this is the first in a series of books designed to stimulate your baby and introduce them to the world of science also coming in may are newtonian physics for babies general relativity for babies rocket science for babies

The Calculus Lifesaver

2007-03-25

for many students calculus can be the most mystifying and frustrating course they will ever take based upon adrian banner s popular calculus review course at princeton university this book provides students with the essential tools they need not only to learn calculus but also to excel at it

The World According to Physics

2020-03-10

quantum physicist new york times bestselling author and bbc host jim al khalili offers a fascinating and illuminating look at what physics reveals about the world shining a light on the most profound insights revealed by modern physics jim al khalili invites us all to understand what this crucially important science tells us about the universe and the nature of reality itself al khalili begins by introducing the fundamental concepts of space time energy and matter and then describes the three pillars of modern physics quantum theory relativity and thermodynamics showing how all three must come together if we are ever to have a full understanding of reality using wonderful examples and thought provoking analogies al khalili illuminates the physics of the extreme cosmic and quantum scales the speculative frontiers of the field and the physics that underpins our everyday experiences and technologies bringing the reader up to speed with the biggest ideas in physics in just a few sittings physics is revealed as an intrepid human quest for ever more foundational principles that accurately explain the natural world we see around us an undertaking guided by core values such as honesty and doubt the knowledge discovered by physics both empowers and humbles us and still physics continues to delve valiantly into the unknown making even the most enigmatic scientific ideas accessible and captivating this deeply insightful book illuminates why physics matters to everyone and calls one and all to share in the profound adventure of seeking truth in the world around us

A History of the Ideas of Theoretical Physics

2012-12-06

this book presents a perspective on the history of theoretical physics over the past two hundreds years it comprises essays on the history of pre maxwellian electrodynamics of maxwell s and hertz s field theories and of the present century s relativity and quantum physics a common thread across the essays is the search for and the exploration of themes that influenced significant conceptual changes in the great movement of ideas and experiments which heralded the emergence of theoretical physics hereafter the fundamental change involved the recognition of the scientific validity of theoretical physics in the second half of the nineteenth century it was not easy for many physicists to understand the nature and scope of theoretical physics and of its adept the theoretical physicist a physicist like ludwig boltzmann one of the eminent contributors to the new discipline

confessed in 1895 that even the formulation of this concept of a theoretical physicist is not entirely without difficulty 1 although science had always been divided into theory and experiment it was only in physics that theoretical work developed into a major research and teaching specialty in its own right 2 it is true that theoretical physics was mainly a creation of turn of the century german physics where it received full institutional recognition but it is also undeniable that outstanding physicists in other european countries namely ampere fourier and maxwell also had an important part in its creation

The Quantum Theory—Origins and Ideas

2021-08-02

this book offers a fresh perspective on some of the central experimental and theoretical works that laid the foundations for today's quantum mechanics it traces the theoretical and mathematical development of the hypotheses that put forward to explain puzzling experimental results it also examines their interconnections and how they together evolved into modern quantum theory particular attention is paid to j j thomson's atomic modeling and experiments at the cavendish laboratory max planck's struggle to explain the experimental results of heinrich rubens and ferdinand kurlbaum as well as the path leading from louis de broglie's ideas to the wave theory of erwin schrödinger combining his experience in teaching quantum mechanics with his interest in the historical roots of the subject the author has created a valuable resource for understanding quantum physics through its history and a book that is appreciated both by working physicists and historians

Great Ideas in Physics

2000-07-17

the conservation of energy the second law of thermodynamics the theory of relativity quantum mechanics together these concepts form the foundation upon which modern physics was built but the influence of these four landmark ideas has extended far beyond hard science there is no aspect of twentieth century culture including the arts social sciences philosophy and politics that has not been profoundly influenced by them in great ideas in physics alan lightman clearly explains the physics behind each of the four great ideas and deftly untangles for lay readers such knotty concepts as entropy the relativity of time and the heisenberg uncertainty principle throughout the book he uses excerpts from the writings of scientific luminaries such as newton kelvin einstein and de broglie to help place each in its proper historical perspective and with the help of expertly annotated passages from the works of dozens of writers philosophers artists and social theorists lightman explores the two way influences of these landmark scientific concepts on our entire human culture and the world of ideas

Beyond the Dynamical Universe

2018-02-02

theoretical physics and foundations of physics have not made much progress in the last few

decades whether we are talking about unifying general relativity and quantum field theory quantum gravity explaining so called dark energy and dark matter cosmology or the interpretation and implications of quantum mechanics and relativity there is no consensus in sight in addition both enterprises are deeply puzzled about various facets of time including above all time as experienced the authors argue that across the board this impasse is the result of the dynamical universe paradigm the idea that reality is fundamentally made up of physical entities that evolve in time from some initial state according to dynamical laws thus in the dynamical universe the initial conditions plus the dynamical laws explain everything else going exclusively forward in time in cosmology for example the initial conditions reside in the big bang and the dynamical law is supplied by general relativity accordingly the present state of the universe is explained exclusively by its past this book offers a completely new paradigm called relational blockworld whereby the past present and future co determine each other via adynamical global constraints such as the least action principle accordingly the future is just as important for explaining the present as is the past most of the book is devoted to showing how relational blockworld resolves many of the current conundrums of both theoretical physics and foundations of physics including the mystery of time as experienced and how that experience relates to the block universe

Einstein's Unfinished Revolution

2019-04-09

a daring new vision of the quantum universe and the scandals controversies and questions that may illuminate our future from canada's leading mind on contemporary physics quantum physics is the golden child of modern science it is the basis of our understanding of atoms radiation and so much else from elementary particles and basic forces to the behaviour of materials but for a century it has also been the problem child of science plagued by intense disagreements between its intellectual giants from albert einstein to stephen hawking over the 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 theory is what challenges our fundamental assumptions about our reality in einstein's unfinished revolution globally renowned theoretical physicist lee smolin provocatively argues that the problems which have bedeviled quantum physics since its inception are unsolved for the simple reason that the theory is incomplete there is more 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 it 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 the field before wrestling with the puzzles and conundrums that they present along the way he illuminates the existing theories about the quantum world that might solve these problems guiding us toward his own vision that embraces common 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 as we know it to find a theory that will give us a complete description of nature in einstein's unfinished revolution lee smolin brings us a step closer to resolving one of the greatest scientific controversies of our age

100 Most Important Science Ideas

2011

100 most important science ideas presents a selection of 100 key concepts in science in a series of concise and accessible essays that are understandable to the layperson the authors explain the answers to the most exciting and important scientific questions which have had a profound influence on our way of life helpful diagrams everyday examples and enlightening quotations highlight the straightforward text all the big ideas that readers would expect to find are present and each is discussed over two to four pages the authors use concrete applications to describe many of the abstract ideas and some entries have a timeline along the bottom showing when the idea originated and its development examples are what can dna reveal about the history of human evolution why does the moon orbit the earth while the earth orbits the sun how will genetic medicine revolutionize healthcare how did chaos theory become so ordered 100 most important science ideas also includes brief biographies of iconic scientists and entertaining anecdotes from the world of scientific discovery it is an indispensable overview of science for anyone who wants to understand the world around them

Quantum Aspects of Life

2008-09-12

this book presents the hotly debated question of whether quantum mechanics plays a non trivial role in biology in a timely way it sets out a distinct quantum biology agenda the burgeoning fields of nanotechnology biotechnology quantum technology and quantum information processing are now strongly converging the acronym bins for bio info nano systems has been coined to describe the synergetic interface of these several disciplines the living cell is an information replicating and processing system that is replete with naturally evolved nanomachines which at some level require a quantum mechanical description as quantum engineering and nanotechnology meet increasing use will be made of biological structures or hybrids of biological and fabricated systems for producing novel devices for information storage and processing and other tasks an understanding of these systems at a quantum mechanical level will be indispensable contents foreword sir r penrose emergence and complexity a quantum origin of life p c w davies quantum mechanics and emergence s lloyd quantum mechanisms in biology quantum coherence and the search for the first replicator j al khalili j mcfadden ultrafast quantum dynamics in photosynthesis a o castro f f olson c f lee n f johnson modelling quantum decoherence in biomolecules j bothma j gilmore r h mckenzie the biological evidence molecular evolution a role for quantum mechanics in the dynamics of molecular machines that read and write dna a goel memory depends on the cytoskeleton but is it quantum a mershin d v nanopoulos quantum metabolism and allometric scaling relations in biology l demetrius spectroscopy of the genetic code j d bashford p d jarvis towards understanding the origin of genetic languages a d patel artificial quantum life can arbitrary quantum systems undergo self replication a k pati s l braunstein a semi quantum version of the game of life a p flitney d abbott evolutionary stability in quantum games a iqbal t cheon quantum transmemetic intelligence e w piotrowski j s

adkowski the debate dreams versus reality plenary debate session on quantum computing for panel c m caves d lidar h brandt a r hamilton against panel d k ferry j gea banacloche s m bezrukov l b kish debate chair c r doering transcript editor d abbott plenary debate quantum effects in biology trivial or not for panel p c w davies s hameroff a zeilinger d abbott against panel j eisert h m wiseman s m bezrukov h frauenfelder debate chair j gea banacloche transcript editor d abbott nontrivial quantum effects in biology a skeptical physicist s view h wiseman j eisert that s life the geometry of π electron clouds s hameroff readership graduate students and researchers in quantum physics biophysics nanosciences quantum chemistry mathematical biology and complexity theory as well as philosophers of science keywords quantum biology quantum computation quantum mechanics biophysics nanotechnology quantum technology quantum information processing bio info nano systems bins emergence complexity complex systems cellular automata game theory biomolecules photosynthesis dna genetic code decoherencekey features is structured in a debate style where contributors argue opposing positionsbrings together some of the finest minds and latest developments in the fieldis entirely unique and there are no competing titles

Head First Physics

2008-09-24

wouldn t it be great if there were a physics book that showed you how things work instead of telling you how finally with head first physics there is this comprehensive book takes the stress out of learning mechanics and practical physics by providing a fun and engaging experience especially for students who just don t get it head first physics offers a format that s rich in visuals and full of activities including pictures illustrations puzzles stories and quizzes a mixed media style proven to stimulate learning and retention one look will convince you this isn t mere theory this is physics brought to life through real world scenarios simple experiments and hypothetical projects head first physics is perfect for anyone who s intrigued by how things work in the natural world you ll quickly discover that physics isn t a dry subject it s all about the world we live in encompassing everything from falling objects and speeding cars to conservation of energy and gravity and weightlessness and orbital behavior this book helps you think like a physicist so you can understand why things really work the way they do gives you relevant examples so you can fully grasp the principles before moving on to more complex concepts designed to be used as a supplement study guide for the college board s advanced placement physics b exam introduces principles for the purpose of solving real world problems not memorization teaches you how to measure observe calculate and yes how to do the math covers scientific notation si units vectors motion momentum conservation newton s laws energy conservation weight and mass gravitation and orbits circular motion and simple harmonic motion and much more if myth busters and other tv programs make you curious about our physical world or if you re a student forced to take a physics course now you can pursue the subject without the dread of boredom or the fear that it will be over your head head first physics comes to rescue with an innovative engaging and inspirational way to learn physics

Physics Squared

2016

the book presents seven fundamental concepts in spacetime physics mostly by following hermann minkowski s revolutionary ideas summarized in his 1908 lecture space and time these concepts are spacetime inertial and accelerated motion in spacetime physics the origin and nature of inertia in spacetime physics relativistic mass gravitation gravitational waves and black holes they have been selected because they appear to be causing most misconceptions and confusion in spacetime physics this second edition has been revised to include additional clarifications more detailed elaboration of the arguments and also new material published in the interim

Seven Fundamental Concepts in Spacetime Physics

2024-01-12

this second edition is ideal for classical mechanics courses for first and second year undergraduates with foundation skills in mathematics

An Introduction to Mechanics

2014

a dazzling book the new stephen hawking sunday times the bestselling author of seven brief lessons on physics takes us on an enchanting consoling journey to discover the meaning of time we are time we are this space this clearing opened by the traces of memory inside the connections between our neurons we are memory we are nostalgia we are longing for a future that will not come time is a mystery that does not cease to puzzle us philosophers artists and poets have long explored its meaning while scientists have found that its structure is different from the simple intuition we have of it from boltzmann to quantum theory from einstein to loop quantum gravity our understanding of time has been undergoing radical transformations time flows at a different speed in different places the past and the future differ far less than we might think and the very notion of the present evaporates in the vast universe with his extraordinary charm and sense of wonder bringing together science philosophy and art carlo roveli unravels this mystery enlightening and consoling the order of time shows that to understand ourselves we need to reflect on time and to understand time we need to reflect on ourselves translated by simon carnell and erica segre

The Order of Time

2018-04-26

the bestselling 30 second series takes a revolutionary approach to learning about those subjects you feel you should really understand each title selects a popular topic and dissects

it into the 50 most significant ideas at its heart each idea no matter how complex is explained in 300 words and one picture all digestible in 30 seconds 30 second quantum theory tackles a mindbendingly mysterious area of physics introducing the 50 most significant quantum quandaries and ideas in a world where the quantum physics of electronics is an everyday essential and new quantum developments make headline news you will visit parallel worlds ride wave theory and learn just enough to talk with certainty about uncertainty theory and to untangle the mysteries of quantum entanglement

30-Second Quantum Theory

2014-07-03

our understanding of nature and in particular of physics and the laws governing it has changed radically since the days of the ancient greek natural philosophers this book explains how and why these changes occurred through landmark experiments as well as theories that for their time were revolutionary the presentation covers mechanics optics electromagnetism thermodynamics relativity theory atomic physics and quantum physics the book places emphasis on ideas and on a qualitative presentation rather than on mathematics and equations thus although primarily addressed to those who are studying or have studied science it can also be read by non specialists the author concludes with a discussion of the evolution and organization of universities from ancient times until today and of the organization and dissemination of knowledge through scientific publications and conferences

History and Evolution of Concepts in Physics

2014-01-29

this is a handbook containing all the advice and recommendations about learning physics i wished someone had told me when i was younger it is neither a career guide nor a comprehensive textbook what s inside understand why self learning is an effective strategy learn why most university students never develop a deep understanding and what alternatives are possible grasp the internal structure of physics learn how the fundamental theories of physics are connected and why physics works at all develop an understanding of the landscape read bird s eye overviews that give a first taste of what the various theories of physics are all about everything you need to get started read detailed reading and learning recommendations that allow you to carve out a personal learning path

Teach Yourself Physics

2020-02-12

anyone who is not shocked by quantum theory has not 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 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 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 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 of the quest to come to grips with the most fundamental theory of physical reality and to explain how its counterintuitive principles underpin the 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 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 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 different world it is our world and if anything deserves to be called weird it's us

Beyond Weird

2018-10-18

basic physics a self teaching guide this book is the most practical complete and very easy learn physics even if you are not a science student this book will help you understand whether you need in school or want to review for an exam or want to be as smart as sheldon cooper on the big bang theory this book will definitely help

Basic Physics

2019-03-17

the phenomenal bestseller there's a book i've been carrying around like a small bible seven brief lessons on physics benedict cumberbatch everything you need to know about modern physics the universe and your place in the world in seven enlightening lessons these seven short lessons guide us with simplicity and clarity through the scientific revolution that shook physics in the twentieth century and still continues to shake us today in this beautiful and mind bending introduction to modern physics carlo rovelli explains einstein's theory of general relativity quantum mechanics black holes the complex architecture of the universe elementary particles gravity and the nature of the mind in under eighty pages readers will understand the most transformative scientific discoveries of the twentieth century and what they mean for us not since richard feynman's celebrated best seller six easy pieces has physics been so vividly intelligently and entertainingly revealed

Seven Brief Lessons on Physics

2015-09-24

this book provides a high level non mathematical description of the main concepts in physics the target audience is anyone who is curious and would like to know more about physics because physics is relevant its discoveries have profound impact they become the technologies that improve our lives and that drive innovation and business this book summarizes what everyone should know about physics it describes the most important particles and how they work it describes the 4 fundamental forces in nature that most

people aren't aware of although they affect how everything around us works the major theories are described classical mechanics thermodynamics electricity and magnetism relativity quantum mechanics cosmology and a theory of everything many examples of inventions are included overall the objective of this book is to provide a succinct overview of physics that is understandable and intellectually satisfying

What You Should Know About Physics

2020-10-28

50 science ideas you really need to know is your guide to the biggest questions and deepest concepts from across the whole of science what was the big bang how did life on earth arise what does quantum mechanics tell us about the universe is true artificial intelligence possible and does life exist on other planets moving from the basics of atoms and molecules newton's laws of physics and the building blocks of life to the cutting edge of nanotechnology einstein's theories of relativity and cloning this book makes the many worlds of science accessible and illuminating featuring fifty concise insightful and illustrated essays covering physics and astronomy earth and life sciences chemistry and materials psychology and computing and exploring the ways they connect with each other and impact on our lives 50 science ideas you really need to know is the ideal introduction to the questions which fascinate us all

50 Science Ideas You Really Need to Know

2016-07-07

from one of the world's leading data scientists a landmark tour of the new science of idea flow offering revolutionary insights into the mysteries of collective intelligence and social influence if the big data revolution has a presiding genius it is mit's alex sandy pentland over years of groundbreaking experiments he has distilled remarkable discoveries significant enough to become the bedrock of a whole new scientific field social physics humans have more in common with bees than we like to admit we're social creatures first and foremost our most important habits of action and most basic notions of common sense are wired into us through our coordination in social groups social physics is about idea flow the way human social networks spread ideas and transform those ideas into behaviors thanks to the millions of digital bread crumbs people leave behind via smartphones gps devices and the internet the amount of new information we have about human activity is truly profound until now sociologists have depended on limited data sets and surveys that tell us how people say they think and behave rather than what they actually do as a result we've been stuck with the same stale social structures classes markets and a focus on individual actors data snapshots and steady states pentland shows that in fact humans respond much more powerfully to social incentives that involve rewarding others and strengthening the ties that bind than incentives that involve only their own economic self interest pentland and his teams have found that they can study patterns of information exchange in a social network without any knowledge of the actual content of the information and predict with stunning accuracy how productive and effective that network is whether it's a business or an entire city we can maximize a group's collective intelligence to improve

performance and use social incentives to create new organizations and guide them through disruptive change in a way that maximizes the good at every level of interaction from small groups to large cities social networks can be tuned to increase exploration and engagement thus vastly improving idea flow social physics will change the way we think about how we learn and how our social groups work and can be made to work better at every level of society pentland leads readers to the edge of the most important revolution in the study of social behavior in a generation an entirely new way to look at life itself

Social Physics

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