

Reading for Oxbridge Physics Applicants

[Was Einstein Right?](#) Clifford Will. Basic Books. ISBN 0465090869

First published in 1986, this award-winning account of how Einstein's theory holds up after more than seventy-five years has been updated to accommodate the most recent experimental findings, as well as the exciting story of the rise and fall of the "fifth force".

[Why Beauty is Truth.](#) Ian Stewart. Basic Books. ISBN 0465082378

Leading mathematician and author Ian Stewart explores a concept both simple and complex, both multi-disciplinary and unifying -symmetry. There is no more important concept in the history of mathematics and physics than symmetry.

[A Historical Introduction to the Philosophy of Science.](#) John Losee. Oxford Press. ISBN 0198700555

Designed for those coming to the subject for the first time, this stimulating introduction offers a historical exposition of differing views on the philosophy of science.

[Hyperspace.](#) Michio Kaku. Oxford Paperbacks. ISBN 0192861891

In the past several years, theoretical physicists – the author among them – have discovered that the universe exists not merely in the four spacetime dimensions (3 of space + one of time) with which Einstein made us familiar, but rather as a ten-dimensional Hyperspace.

[In Search of Schrodinger's Cat.](#) John Gribbin. Black Swan. ISBN 0552125555

Quantum theory is so shocking that Einstein could not bring himself to accept it. It is so important that it provides the fundamental underpinning of all modern sciences. Without it, we'd have no computers, no science of molecular biology, no understanding of DNA, no genetic engineering.

[Schrodinger's Kittens.](#) John Gribbin. Phoenix. ISBN 1857994027

John Gribbin presents the recent dramatic improvements in experimental techniques that have enabled physicists to formulate and test new theories about the nature of light. He describes these theories not in terms of hard-to-imagine entities like spinning sub-nuclear particles, but in terms of the fate of two small cats, separated at a tender age and carried to opposite ends of the universe.

[Wrinkles in Time.](#) George Smoot. Harper Perennial. ISBN 0061344443

Written by the 2006 Nobel Prize winner this book tells the story of the discovery and mapping of Cosmic Microwave Background. Engaging and highly informative.

[Chaos.](#) James Gleick. Vintage. ISBN 0749386061

This book brings together different work in the field of physics called the chaos theory, an extension of classical mechanics, in which simple and complex causes are seen to interact. Think butterflies and storms.

[The Fabric of Reality.](#) David Deutsch. Penguin. ISBN 0140146903

An extraordinary and challenging synthesis of ideas uniting Quantum Theory, and the theories of Computation, Knowledge and Evolution, Deutsch's extraordinary book explores the deep connections between these strands which reveal the fabric of reality in which human actions and ideas play essential roles.

[The Elegant Universe.](#) Brian Greene. Vintage. ISBN 009928992X

A synopsis of modern physics, well written, including string theory.

[An Illustrated Brief History of Time.](#) Stephen Hawking. Bantam Press. ISBN 0593040597

Overrated but an important book to be seen to have read.

[A Short History of Nearly Everything](#). Bill Bryson. Black Swan. ISBN: 0552997048

Addresses everything from Big Bang to the rise of human civilization. Subjects that bore the pants off the average reader - geology, chemistry, particle physics, DNA - rendered comprehensible, engaging, even fun.

[Six easy pieces](#). Richard Feynmann. Penguin. ISBN 0140276661X

Atoms, gravity, fundamental physics, quantum behaviour.

[Six not-so-easy-pieces](#). Richard Feynmann. Penguin. ISBN 014027667

Vectors, symmetries, energy, momentum, special and general relativity. Highly advanced.

[The Inflationary Universe](#). Alan Guth. Vintage. ISBN 0-09-995950-X

Well written account of the main physics of the Big Bang theory.

[In Search of SUSY](#). John Gribbin. Penguin. ISBN 0140275827

Supersymmetry, string theory, search for the Theory of Everything. Little mathematics.

[Superforce](#). Paul Davies. Unwin Paperbacks. ISBN 0045390061

Search for a grand unified field theory of nature. Superb introduction. Much particle physics.

[The First Three Minutes](#). Stephen Weinberg. Basic Books. ISBN 0465024378

A classic on the Big Bang but rather dated. Excellent read though.

[The New Quantum Universe](#). Hey and Walters. Cambridge University Press. ISBN 0521564573

Highly accessible book, well illustrated. Good read.

[The Problems of Physics](#). A.J.Leggett. Oxford Paperbacks. ISBN 0192891863

A review of difficult concepts and challenges in physics, without mathematics.

[The Strange Theory of Light and Matter](#). Richard Feynmann. Penguin. ISBN0140125051

Good review of photons, light and quantum behaviour building up to QED. Inspired AS chapter on quantum behaviour in the IOP course. Alternative book by same author is QED.

[The Emperor's New Mind](#). Roger Penrose. Oxford Press. ISBN 0198519737

Mathematics (accessible), quantum physics, cosmology and arrow of time, quantum gravity, real brains and minds, physics of mind, quantum computing.

[The Wonders of the Universe](#). Brian Cox. Collins. ISBN 0007395825

I suppose we have to have something by Brian Cox. This one is very pretty at least.