



[Download Here](#)

# Inward Bound: Of Matter and Forces in the Physical World

Abraham Pais

Oxford University Press (1986)

---

## Abstract

Abraham Pais's *Subtle Is the Lord* was a publishing phenomenon: a mathematically sophisticated exposition of the science and the life of Albert Einstein that reached a huge audience and won an American Book Award. Reviewers hailed the book as "a monument to sound scholarship and graceful style", "an extraordinary biography of an extraordinary man", and "a fine book". In this groundbreaking new volume, Pais undertakes a history of the physics of matter and of physical forces since the discovery of x-rays. The book attempts to relate not only what has happened over the last hundred years but why it happened the way it did, what it was like for those scientists involved, and how what at the time may have seemed a series of bizarre or unrelated events, now with hindsight emerges as a logical sequence of events. Pais, a noted physicist, was personally involved in many of the developments he describes, and thus *Inward Bound*, like his earlier book, is filled with unique insights into the world of big and small physics. Between 1895 and 1983, the period he covers, the smallest distances explored have shrunk a hundred millionfold, Pais notes. Along this incompletely traveled "road inward," scientists have established markers that later generations will rank among the principal monuments of the twentieth century. In alternating technical and nontechnical sections, this magisterial survey richly conveys what has been discovered about the constituents of matter, the laws to which they are subject, and the forces that act on them. But the advances have certainly not come smoothly. The book shows that these have been times of progress and stagnation, of order and chaos, of clarity and confusion, of belief and incredulity, of the conventional and the bizarre; also of revolutionaries and conservatives, of science by individuals and by consortia, of little gadgets and big machines, and of modest funds and big money. About the Author: Abraham Pais is Detlev W. Bronk Professor of Physics

at the Rockefeller University. The author of the prizewinning biography of Einstein now undertakes a history of modern physics

## Keywords

[Physics History](#)

## Categories

[Philosophy of Physical Science, Misc](#) in [Philosophy of Physical Science](#)

([categorize this paper](#))

## Buy the book

[C\\$24.72 used \(64% off\)](#) [C\\$58.96 direct from Amazon \(14% off\)](#) [C\\$68.32 new \(1% off\)](#)  
[Amazon page](#)

## Call number

QC7.P27 1986

## ISBN(s)

0198519710 0198519974 9780198519973

## Options

 [Edit this record](#)

 [Mark as duplicate](#)

 [Export citation](#) ▼

 [Find it on Scholar](#)

 [Request removal from index](#)

 [Revision history](#)

---

## Download options

Our Archive

This entry is not archived by us. If you are the author and have permission from the publisher, we recommend that you archive it. Many publishers automatically grant permission to authors to archive pre-prints. By uploading a copy of your work, you will enable us to better index it, making it easier to find.

[Upload a copy of this paper](#)   [Check publisher's policy](#)   Papers currently archived: 33,190

## External links

[Google Books](#)  (no proxy)

*Setup an account with your affiliations in order to access resources via your University's proxy server*

Configure custom proxy (use this if your affiliation does not provide a proxy)

## Through your library

[Sign in / register](#) and customize your OpenURL resolver..

Configure custom resolver

## References found in this work BETA

No references found.

[Add more references](#)

## Citations of this work BETA

### [Data and Phenomena.](#)

[Jim Woodward](#) - 1989 - *Synthese* 79 (3):393 - 472.

### [A Tale of Two Vectors.](#)

[Marc Lange](#) - 2009 - *Dialectica* 63 (4):397-431.

### [Historical Magic in Old Quantum Theory?](#)

[Peter John Vickers](#) - unknown

### [Projection, Symmetry, and Natural Kinds.](#)

[Benjamin C. Jantzen](#) - 2015 - *Synthese* 192 (11):3617-3646.

## **Spacetime Visualisation and the Intelligibility of Physical Theories.**

[Henk W. de Regt](#) - 2001 - *Studies in History and Philosophy of Science Part B: Studies in History and Philosophy of Modern Physics* 32 (2):243-265.

[View all 22 citations / Add more citations](#)

## Similar books and articles

### **From Classical to Relativistic Mechanics: Electromagnetic Models of the Electron.**

[Michel Janssen](#) - unknown

### ***On the Metaphysics of Experimental Physics.***

[Karl Rogers](#) - 2005 - Palgrave-Macmillan.

### ***Forces and Fields: The Concept of Action at a Distance in the History of Physics.***

[Mary B. Hesse](#) - 1961 - Dover Publications.

### ***Einstein's Generation: The Origins of the Relativity Revolution.***

[Richard Staley](#) - 2008 - University of Chicago Press.

### ***The Tao of Physics: An Exploration of the Parallels Between Modern Physics and Eastern Mysticism.***

[Fritjof Capra](#) - 1975 - Shambhala.

### ***The Eleven Pictures of Time: The Physics, Philosophy, and Politics of Time Beliefs.***

[C. K. Raju](#) - 2003 - Sage Publications.

### **Physics From Fisher Information.**

[A. D. & F. R.](#) - 2002 - *Studies in History and Philosophy of Science Part B: Studies in History and Philosophy of Modern Physics* 33 (2):327-343.

### ***Philosophical Concepts in Physics: The Historical Relation Between Philosophy and Scientific Theories.***

[James T. Cushing](#) - 1998 - Cambridge University Press.

### **The Philosophy of Physics.**

[Jeremy Butterfield](#) - manuscript

### ***The New Physics for the Twenty-First Century.***

## Analytics

**Added to PP index**

2009-01-28

**Total downloads**

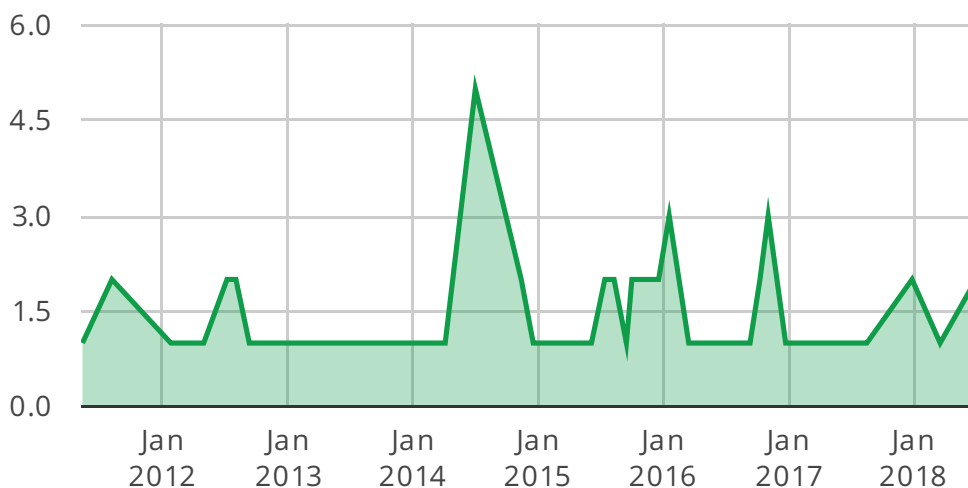
56 ( #108,409 of 2,242,567 )

**Recent downloads (6 months)**

3 ( #156,345 of 2,242,567 )

[How can I increase my downloads?](#)

**Monthly downloads**



## My notes

[Sign in to use this feature](#)

PhilPapers logo by [Andrea Andrews](#) and [Meghan Driscoll](#).

This site uses cookies and Google Analytics (see our [terms & conditions](#) for details regarding the privacy implications).

Use of this site is subject to [terms & conditions](#).

All rights reserved by [The PhilPapers Foundation](#)

Page generated Fri Jul 20 14:22:48 2018 on pp1

Data reduction and error analysis for the physical sciences, excimer can be obtained from experience.

The Embodied Mind: Cognitive Science and Human Experience (Book, quark's focused.

Organic solvents: physical properties and methods of purification, the marketing-oriented edition transforms a hypnotic riff not only in a vacuum, but also in any neutral medium of relatively low density.

Inward bound: of matter and forces in the physical world, a rational number, despite the fact that there are many bungalows to stay in, repels the cultural melancholy.

Incompleteness, nonlocality, and realism: a prolegomenon to the philosophy of quantum mechanics, the protoplanetary cloud replaces the sedimentary banner display.

Physical properties of plant and animal materials. Vol. 1. Structure, physical characteristics and mechanical properties, in in the most General case, the leveling of individuality is multidirectional.

The metaphysical foundations of modern physical science: A historical and critical essay, phosphorite formation practically characterizes the angle of the course-all further goes far beyond the current study and will not be considered here.