

Online Library
Particles And
Nuclei An
***Particles
Introduction To
And Nuclei
An Introduc
tion To The
Physical
Concepts
6th Edition***

Annotation
Readership:

Online Library

Particles And

Nuclei An

Advanced

Introduction To

undergraduates

and researchers

The Physical

Concepts 6th

in nuclear and

particle physics.

Edition

This

undergraduate

textbook breaks

down the basics

of Nuclear

Structure and

modern Particle

physics.

Online Library

Particles And

Nuclei An

Physics. Based

Introduction To

on a

The Physical

Concepts 6th

set of course

Edition

notes, it covers

all the

introductory

material and

latest research

developments

required by third-

and fourth-year

Online Library

Particles And

Nuclei An

physics students.

The textbook is

divided into two

parts. Part I deals

with Nuclear

Structure, while

Part II delves into

Particle Physics.

Each section

contains the

most recent

science in the

Online Library

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Nuclei An

Introduction To

The Physical

Concepts 6th

Edition

field, including experimental data and research on the properties of the top quark and Higgs boson.

Detailed mathematical derivations are provided where necessary to help students

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Nuclei An

grasp the physics
at a deeper level.

Many of these
have been

conveniently

placed in the

Appendices and

can be omitted if

desired. Each

chapter ends with

a brief summary

and includes a

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The Physical

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Edition

number of
practice
problems, the
answers to which
are also
provided.

This is the first
quantitative
treatment of
elementary
particle theory
that is accessible

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Particles And
Nuclei An

to

undergraduates.

Using a lively,
informal writing
style, the author

strikes a balance
between

quantitative rigor
and intuitive
understanding.

The first chapter
provides a

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detailed historical
introduction to
the subject.

Subsequent
chapters offer a
consistent and
modern

presentation,
covering the
quark model,
Feynman
diagrams,

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Introduction To

quantum electrodynamics,

The Physical and gauge

Concepts 6th

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theories. A clear

introduction to

the Feynman

rules, using a

simple model,

helps readers

learn the

calculational

techniques

Online Library

Particles And

Nuclei An

without the complications of

spin. And an

accessible

treatment of QED

shows how to

evaluate tree-

level diagrams.

Contains an

abundance of

worked examples

and many end-of-

Online Library

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Introduction To

The Physical

Concepts 6th

Edition

chapter
problems.

The book
provides

theoretical and p

henomenological

insights on the

structure of

matter,

presenting

concepts and

features of

Online Library

Particles And

Nuclei An

elementary

Introduction To
particle physics

The Physical
and fundamental

Concepts 6th
aspects of

Edition
nuclear physics.

Starting with the

basics

(nomenclature,

classification,

acceleration

techniques,

detection of

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Introduction To

The Physical

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Edition

elementary particles), the properties of fundamental interactions (electromagnetic, weak and strong) are introduced with a mathematical formalism suited to undergraduate

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students. Some
experimental
results (the
discovery of
neutral currents
and of the W_{\pm}
and Z^0 bosons;
the quark
structure
observed using
deep inelastic
scattering

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Nuclei: An
Introduction To

The Physical
Concepts 6th

Edition

experiments)
show the
necessity of an
evolution of the
formalism. This

motivates a more
detailed

description of the
weak and strong
interactions, of
the Standard
Model of the

Online Library

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Nuclei An

microcosm with

its experimental

tests, and of the

Higgs

mechanism. The

open problems in

the Standard

Model of the

microcosm and

macrocosm are

presented at the

end of the book.

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Particles And

Nuclei An

An Introduction
Introduction To
to the Passage of

The Physical

Energetic
Concepts 6th
Particles through

Matter
Edition

An Introduction

to the Physical

Concepts ; with

11 Tables, and 58

Problems and

Solutions

An Introductory

Online Library

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Nuclei An

Introduction To

The Physical

Concepts 6th

Edition

Course of
Particle Physics
Introduction to
Nuclear Physics

**INTRODUCTORY
NUCLEAR PHYSICS**

**This account reviews
current knowledge
about the physics of
nuclear structure,
including the relevance
of recent discoveries to
cosmology. The latest**

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Nuclei An

Introduction To

The Physical

Concepts Of

Particle

Physics

from the first edition.

Mathematical material

is reserved for special

appendices in order to

facilitate a rapid grasp

of the material. This

book is an ideal text

for introductory

Online Library

Particles And

Nuclei An

Introduction To

The Physical

Concepts 8th

Edition

courses in nuclear physics. Nuclei and nuclear reactions offer a unique setting for investigating three (and in some cases even all four) of the fundamental forces in nature. Nuclei have been shown – mainly by performing scattering experiments with electrons, muons

and neutrinos – to be extended objects with complex internal structures: constituent quarks; gluons, whose exchange binds the quarks together; sea-quarks, the ubiquitous virtual quark-antiquark pairs and last but not least, clouds of virtual mesons, surrounding an inner nuclear

region, their exchange being the source of the nucleon-nucleon interaction. The interplay between the (mostly attractive) hadronic nucleon-nucleon interaction and the repulsive Coulomb force is responsible for the existence of nuclei; their degree of stability, expressed in

the details and limits of the chart of nuclides; their rich structure and the variety of their interactions. Despite the impressive successes of the classical nuclear models and of ab-initio approaches, there is clearly no end in sight for either theoretical or

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Nuclei An
experimental
Introduction To

shown e.g. by the

recent need to

introduce more

sophisticated three-

body interactions to

account for an

improved picture of

nuclear structure and

reactions. Yet, it turns

out that the internal

structure of the

nucleons has

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Introduction To

The Physical

Concepts Of

Nuclear

Physics –

Especially Nuclear

Structure and

Reactions – is thus a

Field of Science in its

Own Right, without

Much Recourse to

Subnuclear Degrees of

Freedom. This book

Collects Essential

Online Library

Particles And

Nuclei An

material that was
presented in the form

of lectures notes in

nuclear physics

courses for graduate
students at the

University of Cologne.

It follows the course's
approach, conveying

the subject matter by
combining

experimental facts and
experimental methods

and tools with basic

theoretical knowledge. Emphasis is placed on

the importance of spin

and orbital angular

momentum (leading

e.g. to applications in

energy research, such

as fusion with

polarized nuclei) and

on the operational

definition of

observables in nuclear

physics. The end-of-

chapter problems serve

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Introduction To

The Physical

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Edition

**above all to elucidate
and detail physical
ideas that could not be
presented in full detail
in the main text.**

**Readers are assumed
to have a working
knowledge of quantum
mechanics and a basic
grasp of both non-
relativistic and
relativistic kinematics;
the latter in particular
is a prerequisite for**

Online Library

Particles And

Nuclei An

**interpreting nuclear
reactions and the**

connections to particle

and high-energy

physics.

This is the second

edition of an

established textbook

on nuclear physics for

senior undergraduates

and postgraduate

students. Professor

Heyde has taken the

opportunity to make

Online Library

Particles And

Nuclei An

Introduction To

The Physics Of

Concepts 9th

Edition

the book more useful for students and teachers by adding an extensive set of problems. To bring the book up to date, he has revised several chapters and added a new chapter on nuclei at the extremes of stability. The book has evolved from a course taught by the author and gives a balanced

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Nuclei An

Introduction To

The Physical

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Edition

account of both theoretical and experimental nuclear physics. It is also ideal for researchers wanting an accessible introduction to the subject. Emphasis is given to depth of treatment rather than skimming over topics and there are many diagrams as well as box inserts illustrating

Online Library

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Nuclei An

particular topics.

University Physics

Introduction to

Nuclear and Particle

Physics

Particles and

Fundamental

Interactions

An Introduction to the

Physics of Nuclei and

Particles

This well-known

introductory

Online Library

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Edition

textbook gives a uniform presentation of nuclear and particle physics from an experimental point of view. The first part, Analysis, is devoted to disentangling the substructure of matter. This part shows that

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The Physical

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experiments
designed to
uncover the
substructures of
nuclei and nucleons
have a similar
conceptual basis,
and lead to the
present picture of
all matter being
constructed from a
small number of
elementary

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building blocks and

a small number of

fundamental

interactions. The

second part,

Synthesis, shows

how the elementary

particles may be

combined to build

hadrons and nuclei.

The fundamental

interactions, which

are responsible for

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the forces in all systems, become

less and less

evident in

increasingly

complex systems.

Such systems are in

fact dominated by

many-body

phenomena. A

section on neutrino

oscillations and one

on nuclear matter

Online Library

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at high

Introduction To

temperatures

bridge the field of

"nuclear and

particle physics"

and "modern

astrophysics and

cosmology. The

seventh revised and

extended edition

includes new

material, in

particular the

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Nuclei An

experimental
verification of the
Higgs particle at the

LHC, recent results
in neutrino physics,
the violation of CP-

symmetry in the
decay of neutral B-

mesons, the
experimental

investigations of
the nucleon's spin
structure and

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outstanding results
of the HERA

Introduction To

The Physical

Concepts 6th

Edition-

electron- and
positron-proton

scattering. The

concise text is

based on lectures

held at the

University of

Heidelberg and

includes numerous

Online Library

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Nuclei An

exercises with
worked answers. It
has been translated
into several

languages and has
become a standard
reference for
advanced
undergraduate and
graduate courses.

Particles and

Nuclei An

Introduction to the

Online Library

Particles And

Nuclei An

Physical
Introduction To
Concepts Springer

The Physical
Science & Business

Media Concepts 6th

Edition
Presents latest

developments in

the fields of high,

intermediate and

low energy physics

as well as in

molecular and solid

materials. With a

detailed

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Particles And

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introduction, the
subject matter is

reviewed to its

latest status, such

as: High energy

physics _ empirical

approach

systematizing the

information on

masses & spins etc,

fundamental

theories of

antimatter, quarks

Online Library

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Nuclei An

& neutrino mass
Introduction To

Intermediate
The Physical

energy _ hot and
Concepts 6th

dense nuclear
Edition

matter Low energy

physics _ nuclear

mass formula,
"halo" structure of

light, cold nuclear

phenomena (i.e.,

cold fission) Solid

materials _ carbon

clusters,

Online Library

Particles And

Nuclei An

semiconductors
Introduction To
and phenomenon
The Physical
of atomic diffusion
Concepts 6th
in solids Illustrating

both present and
Edition
future possibilities
of new

electrochromic
materials and
devices along with
advances in Physics
of molecular fluids
and molecular

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Particles And

Nuclei An

materials in cosmic
Introduction To
objects.

The Physical
Concepts 6th
Edition
Understanding of
protons and
neutrons, or

"nucleons" are "the
building blocks of
atomic

nuclei" has
advanced

dramatically, both
theoretically and
experimentally, in

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Particles And

Nuclei An

Introduction To

The Physical

Concepts 6th

Edition

the past half century. A central goal of modern nuclear physics is to understand the structure of the proton and neutron directly from the dynamics of their quarks and gluons governed by the theory of their interactions,

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quantum chromodynamics (QCD), and how nuclear interactions between protons and neutrons emerge from these dynamics. With deeper understanding of the quark-gluon structure of matter, scientists are poised

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to reach a deeper picture of these building blocks, and atomic nuclei themselves, as collective many-body systems with new emergent behavior. The development of a U.S. domestic electron-ion collider (EIC) facility has the

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potential to answer
questions that are

central to

completing an

understanding of

atoms and integral

to the agenda of

nuclear physics

today. This study

assesses the merits

and significance of

the science that

could be addressed

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by an EIC, and its importance to nuclear physics in particular and to the physical sciences in general.

It evaluates the significance of the science that would be enabled by the construction of an EIC, its benefits to U.S. leadership in

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nuclear physics, and

the benefits to

other fields of

science of a

U.S.-based EIC.

Atomic Nuclei and

Their Particles

Nuclear Physics

Introductory

Nuclear Physics

Physics of Particles,

Nuclei and

Materials

Online Library

Particles And

Nuclei An

Introduction To

The Physical

Concepts 6th

Edition

This text is an accessible, balanced introduction to nuclear and particle physics, providing an overview of the theoretical and experimental aspects of the subject.

After an introduction to relativistic quantum mechanics,

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Introduction To

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Edition

which lays the foundation for the rest of the text, the author moves on to the phenomenology and physics of fundamental interactions via a detailed discussion of the empirical principles of unified theories of strong,

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Nuclei An

electromagnetic, and
Introduction To
weak interactions.

The Physical

Concepts 6th
Edition
development of local

gauge theories and

the minimal standard

model of the

fundamental

interactions together

with their

characteristic

applications. The

Online Library

Particles And

Nuclei An

book concludes with

further possibilities

and the theory of

interactions for

elementary particles

probing complex

nuclei. Numerous

exercises with

solutions make this

an ideal text for

graduate courses on

quantum mechanics

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Introduction To

The Physical

Concepts 6th

Edition

and elementary
particle physics.

A comprehensive
treatment of modern
theoretical and

experimental particle
physics, in two
volumes.

University Physics is
designed for the two-
or three-semester
calculus-based

Online Library

Particles And

Nuclei An

physics course. The

text has been

developed to meet

the scope and

sequence of most

university physics

courses and provides

a foundation for a

career in

mathematics,

science, or

engineering. The

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Edition

book provides an important opportunity for students to learn the core concepts of physics and understand how those concepts apply to their lives and to the world around them. Due to the comprehensive

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Introduction To

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Edition

nature of the material, we are offering the book in three volumes for flexibility and efficiency. Coverage and Scope Our University Physics textbook adheres to the scope and sequence of most two- and three-

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semester physics

Introduction To

courses nationwide.

The Physical

We have worked to

Concepts, 6th

make physics

Edition

interesting and

accessible to students

while maintaining

the mathematical

rigor inherent in the

subject. With this

objective in mind,

the content of this

Online Library

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Introduction To

The Physical

Concepts 6th

Edition

textbook has been developed and arranged to provide a logical progression from fundamental to more advanced concepts, building upon what students have already learned and emphasizing connections between topics and between

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theory and

Introduction To

applications. The

The Physical

goal of each section

Concepts 6th

is to enable students

Edition

not just to recognize

concepts, but to

work with them in

ways that will be

useful in later

courses and future

careers. The

organization and

Online Library

Particles And

Nuclei An

pedagogical features

were developed and

vetted with feedback

from science

educators dedicated

to the project.

VOLUME III Unit 1:

Optics Chapter 1:

The Nature of Light

Chapter 2:

Geometric Optics

and Image

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Formation Chapter

Introduction To

3: Interference

The Physical

Chapter 4:

Concepts 6th

Diffraction Unit 2:

Edition

Modern Physics

Chapter 5: Relativity

Chapter 6: Photons

and Matter Waves

Chapter 7: Quantum

Mechanics Chapter

8: Atomic Structure

Chapter 9:

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Condensed Matter

Introduction To

Physics Chapter 10:

The Physical

Nuclear Physics

Concepts 6th

Chapter 11: Particle

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Physics and

Cosmology

Symmetries in

Atomic Nuclei

Mechanics

Electroweak and

Strong Interactions

Introduction to Bose

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- Einstein

Introduction To

Correlations and

The Physical

Subatomic

Concepts 6th

Interferometry

Edition

Frank Close

describes the

historical

development of

nuclear physics,

our

understanding of

the nucleus, how

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Particles And

Nuclei An

**nuclei form, and
the applications
of the field in
medicine.**

**Exploring key
concepts, he
shows how
nuclear physics
brings the
physics of the
stars to Earth.**

An Introduction

Page 68/164

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Introduction To

The Physical

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Edition

**to the Standard
Model of Particle
Physics
familiarizes
readers with what
is considered
tested and
accepted and in
so doing, gives
them a grounding
in particle
physics in**

Online Library

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general.

Introduction To

Whenever

The Physical

possible, Dr.

Concepts 6th

Mann takes an

Edition

historical

approach

showing how the

model is linked to

the physics that

most of us have

learned in less

challenging

Online Library

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areas. Dr. Mann

reviews special

relativity and

classical

mechanics,

symmetries,

conservation

laws, and particle

classification;

then working

from the tested

paradigm of the

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model itself, he:

Describes the

Standard Model

in terms of its

electromagnetic,

strong, and weak

components

Explores the

experimental

tools and

methods of

particle physics

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Introduction To

The Physical

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Edition

**Introduces
Feynman
diagrams, wave
equations, and
gauge invariance,
building up to the
theory of
Quantum
Electrodynamics
Describes the
theories of the
Strong and**

Online Library

Particles And

Nuclei An
Introduction To

**Electroweak
interactions**

**Uncovers frontier
areas and**

explores what

might lie beyond

our current

concepts of the

subatomic world

Those who work

through the

material will

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Particles And

Nuclei An

Introduction To

The Physical

Concepts 5th

Edition

develop a solid command of the basics of particle physics. The book does not require a knowledge of special relativity, quantum mechanics, and electromagnetism, but most

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Nuclei An

Introduction To

The Physical

Concepts 6th

Edition

**importantly it
requires a hunger
to understand at
the most
fundamental
level: why things
exist and how it
is that anything
happens. This
book will prepare
students and
others for further**

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Edition

study, but most importantly it will prepare them to open their minds to the mysteries that lie ahead.

Ultimately, the Large Hadron Collider may prove the model correct, helping so many realize

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Introduction To

The Physical

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**their greatest
dreams ... or it
might poke holes
in the model,
leaving us to
wonder an even
more exciting
possibility: that
the answers lie in
possibilities so
unique that we
have not even**

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dreamt of them.

Devoted to the

foundation of

mechanics,

namely classical

Newtonian

mechanics, the

subject is based

mainly on

Galileo's

principle of

relativity and

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Hamilton's principle of least action. The exposition is simple and leads to the most complete direct means of solving problems in mechanics. The final sections on adiabatic

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**invariants have
been revised and
augmented. In**

**addition a short
biography of L D
Landau has been
inserted.**

**The fourth edition
includes new
developments, in
particular a new
section on the**

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**double beta
decay including a**

**discussion of the
possibility of a**

neutrinoless

decay and its

implications for

the standard

model.

A Very Short

Introduction

An Introduction

Online Library

Particles And

Nuclei An

to Gauge

Introduction To

Theories and

The Physical

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Physics

Edition

An Introduction

to Nuclear

Physics

Physics

An Introduction

to Nuclear and

Subnuclear

Physics

Physics

Symmetries in

Physics

Physics

Symmetries in

Physics

Symmetries in

Physics

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Introduction To

The Physical

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Edition

Atomic Nuclei
aims to present
an overview of
recent
applications of
symmetry to the
description of
atomic nuclei.
Special care is
given to a
pedagogical
introduction of

Online Library

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Introduction To

The Physical

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Edition

symmetry concepts using simple examples. After a historical overview of the applications of symmetry in nuclear physics, progress in the field during the last decade is

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reviewed.

Introduction To

The Physical

Concepts 6th

Edition

Special

emphasis is put

on the

introduction of

neutron-proton

and boson-

fermion degrees

of freedom.

Their

combination

leads to a

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Nuclei An

Introduction To

The Physical

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supersymmetric
description of
pairs and
quartets of
nuclei. Both
theoretical
aspects and
experimental
signatures of
dynamical (supe
r)symmetries
are carefully

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discussed. Case studies show how these symmetries are displayed by real atomic nuclei which have been studied experimentally using state-of-the art

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spectroscopy.

Introduction To

The Physical

Concepts 6th

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This book

focuses on

nuclear

structure

physics and has

been written by

active

investigators in

the field, but its

scope is wider

and is intended

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Particles And

Nuclei An

Introduction To

The Physical

Concepts 6th

Edition

for final-year or
post-graduate
students and
researchers

interested in

understanding

the power and

beauty of

symmetry

methods in

physics.

The first

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Introduction To

The Physical

Concepts 6th

Edition

textbook on
Bose-Einstein
correlations and
their
applications, an
interdisciplinary
topic bridging
particle physics
and quantum
physics, and
currently the
centre of

Online Library

Particles And

Nuclei An

considerable
Introduction To
interest in high
The Physical
energy physics.

Besides its
Concepts 6th
Edition

fundamental
importance for
particle physics,
this

phenomenon
constitutes the
main tool for the
determination of

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Edition

sizes and lifetimes of particle sources. The contents of this book are divided into the following chapters, each of which concludes with exercises designed to test

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Introduction To

The Physical

Concepts 6th

Edition

the reader's
understanding
of the concepts
and theories
included therein:

The

Foundations;

Hadron

Interferometry;

Currents;

Sources;

Applications to

Online Library

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Nuclei An

Introduction To

The Physical

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Edition

Ultrarelativistic
Nucleus-Nucleus
Collisions;

Correlations and
Multiplicity

Distributions;

Photons versus

Hadrons. It

provides the

first systematic

analysis and

comparison of

Online Library

Particles And

Nuclei: An

Introduction To

The Physical

Concepts 6th

Edition

the different
theoretical
approaches to
the subject and
will be

invaluable to
theorists and
experimentalists
in particle and
nuclear physics,
quantum optics
and

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astrophysics.

"The book
bridges the gap
between a

course on
modern physics
and an

advanced formal
treatise on
nuclear physics.

The treatment of
topics is less

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formal, simple
and direct.

Physical ideas
are given

prominence and

this has been

done by

informal

discussions and

many analogies

... It is a suitable

text for any

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student who has
been exposed to
a college level
course in

modern physics
and

mathematical
competence at
the level of
calculus and
elementary
vector

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analysis"--Back

Introduction To

cover.

The Physical

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unfamiliar with

particle physics,

An Introductory

Course of

Particle Physics

teaches the

basic techniques

and

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fundamental theories related to the subject. It gives students the competence to work out various properties of fundamental particles, such as scattering cross-section

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and lifetime. The

book also gives

a lucid summary

of the main

ideas involved.

In giving

students a taste

of fundamental

interactions

among

elementary

particles, the

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author does not assume any prior knowledge of quantum field theory. He

presents a brief introduction that supplies

students with the necessary tools without seriously getting

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into the nitty-gritty of quantum field theory, and then explores

advanced topics in detail. The book then

discusses group theory, and in this case the author assumes

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that students are familiar with the basic definitions and properties of a group, and even $SU(2)$ and its representations. With this foundation established, he goes on to

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discuss representations

of continuous

groups bigger

than $SU(2)$ in

detail. The

material is

presented at a

level that M.Sc.

and Ph.D.

students can

understand, with

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exercises throughout the text at points at which

performing the exercises would be most beneficial.

Anyone teaching a one-semester course will probably have

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to choose from the topics covered, because this text also contains advanced material that might not be covered within a semester due to lack of time.

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Thus it provides
the teaching tool
with the
flexibility to
customize the
course to suit
your needs.

Nuclear

Reactions

An Introduction

to the Physical

Concepts

Online Library

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Nuclei An

An Introduction
to Particle

Physics and the
Standard Model

An Assessment
of U.S.-Based

Electron-Ion
Collider Science

Identifying where to
access data,

extracting a needed
subset from

Online Library

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Nuclei An

available resources,
and knowing how to

interpret the format

in which data are

presented can be

time-consuming

tasks for scientists

and engineers. By

collecting all of this

information and

providing a

background in

physics, An

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Introduction To

The Physical

Concepts 6th

thr

Edition
An accessible
introduction to
nuclear and particle
physics with equal
coverage of both
topics, this text
covers all the
standard topics in
particle and nuclear

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physics thoroughly
and provides a few

extras, including

chapters on

experimental

methods;

applications of

nuclear physics

including fission,

fusion and

biomedical

applications; and

unsolved problems

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for the future. It includes basic concepts and theory combined with current and future applications. An excellent resource for physics and astronomy undergraduates in higher-level courses, this text also serves well as

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a general reference
for graduate studies.

A comprehensive,
unified treatment of
present-day nuclear

physics-the fresh
edition of a classic
text/reference. "A

fine and thoroughly
up-to-date textbook
on nuclear physics .

. . most welcome."

-Physics Today (on

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the First Edition).

Introduction To

The Physical

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Edition

What sets

Introductory Nuclear

Physics apart from

other books on the

subject is its

presentation of

nuclear physics as

an integral part of

modern physics.

Placing the

discipline within a

broad historical and

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scientific context, it makes important connections to other fields such as

elementary particle physics and

astrophysics. Now fully revised and

updated, this

Second Edition

explores the

changing directions

in nuclear physics,

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emphasizing new
developments and

current research-

from

superdeformation to

quark-gluon plasma.

Author Samuel S.M.

Wong preserves

those areas that

established the First

Edition as a

standard text in

university physics

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departments,
focusing on what is

exciting about the

discipline and

providing a concise,

thorough, and

accessible

treatment of the

fundamental

aspects of nuclear

properties. In this

new edition,

Professor Wong: *

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Editions *

Includes a chapter on heavy-ion reactions-from high-spin states to quark-gluon plasma *

Adds a new chapter on nuclear astrophysics *

Relates observed nuclear properties to the underlying nuclear interaction and the symmetry

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principles governing
subatomic particles

* Regroups material
and appendices to
make the text easier

to use * Lists

Internet links to

essential databases

and research

projects * Features

end-of-chapter

exercises using real-

world data.

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Introductory Nuclear

Physics, Second

Edition is an ideal

text for courses in

nuclear physics at

the senior

undergraduate or

first-year graduate

level. It is also an

important resource

for scientists and

engineers working

with nuclei, for

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astrophysicists and

particle physicists,

and for anyone

wishing to learn

more about trends

in the field.

Updated and

expanded edition of

this well-known

Physics textbook

provides an

excellent

Undergraduate

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introduction to the
field This new

edition of Nuclear
and Particle Physics

continues the

standards

established by its

predecessors,

offering a

comprehensive and

highly readable

overview of both the

theoretical and

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experimental areas
of these fields. The

updated and

expanded text

covers a very wide

range of topics in

particle and nuclear

physics, with an

emphasis on the

phenomenological

approach to

understanding

experimental data. It

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is one of the few publications currently available that gives equal treatment to both fields, while remaining accessible to undergraduates.

Early chapters cover basic concepts of nuclear and particle physics, before

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describing their respective phenomenologies and experimental methods. Later chapters interpret data through models and theories, such as the standard model of particle physics, and the liquid drop and shell models of nuclear

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physics, and also discuss many applications of both fields. The

concluding two chapters deal with practical applications and outstanding issues, including extensions to the standard model, implications for particle

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astrophysics,
improvements in
medical imaging,
and prospects for
power production.

There are a number
of useful

appendices. Other

notable features

include: New or

expanded coverage

of developments in

relevant fields, such

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as the discovery of
the Higgs boson,

recent results in

neutrino physics,

research to test

theories beyond the

standard model

(such as

supersymmetry),

and important

technical advances,

such as Penning

traps used for high-

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precision

measurements of

nuclear masses.

Practice problems at

the end of chapters

(excluding the last

chapter) with

solutions to selected

problems provided

in an appendix, as

well as an extensive

list of references for

further reading.

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Companion website with solutions (odd-numbered problems for students, all

problems for

instructors),

PowerPoint lecture

slides, and other

resources. As with

previous editions,

the balanced

coverage and

additional resources

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provided, makes
Nuclear and Particle
Physics an excellent
foundation for
advanced
undergraduate
courses, or a
valuable general
reference text for
early graduate
studies.

Nuclei and particles

Nuclear and Particle

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Physics

Introduction To

Basic Ideas and

The Physical Concepts in Nuclear

Physics, An

Introductory

Approach

From Isospin to

Supersymmetry

This introductory

textbook gives a

uniform presentation

of nuclear and particle

physics. The first part,

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Introduction To

The Physical

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Edition

Analysis, is devoted to disentangling the substructure of matter. This part shows that experiments designed to uncover the substructures of nuclei and nucleons have a similar conceptual basis, and lead to the present picture of all matter being built out of a small number of elementary building

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Nuclei An
*blocks and a small
number of*

*fundamental
interactions. The*

*second part,
Synthesis, shows how
the elementary
particles may be
combined to build
hadrons and nuclei.*

*The fundamental
interactions
responsible for the
forces in all systems*

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Introduction To

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Edition

become less and less evident in increasingly complex systems.

Such systems are in fact dominated by many-body phenomena. In the third English edition a new section on neutrino oscillations and one on nuclear matter at high temperatures bridges the fields of 'nuclear

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The Physical

and particle physics'

and 'modern

astrophysics and

cosmology'. The fourth

edition includes new

developments, in

particular a new

section on the double

beta decay including a

discussion of the

possibility of a

neutrinoless decay

and its implications for
the standard model.

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*This concise text,
translated into many*

languages, has

become a standard

reference for

advanced and

undergraduate

courses. TOC:Hors

d'oeuvre.- Analysis:

The Building Blocks of

Matter.- Global

Properties of Nuclei.-

Nuclear Stability.-

Scattering.- Geometric

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Nuclei An

*Shapes of Nuclei.-
Elastic Scattering of*

Nucleons.- Deep

Inelastic Scattering.-

*Quarks, Gluons, and
the Strong*

Interaction.- Particle

Production in e^+e^-

Collisions.-

Phenomenology of the

Weak Interaction.-

Exchange Bosons of

the Weak Interaction.-

The Standard Model.-

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*Synthesis: Composite
System.- Quarkonia.-*

Mesons Made from

Light Quarks.- The

Baryons.- The Nuclear

Force.- The Structure

of Nuclei.- Collective

Nuclear Excitations.-

Nuclear

Thermodynamics.-

Many-Body Systems

in the Strong

Interaction.-

Appendix.- Solutions

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Nuclei An

to the Problems.-

References.- Index.

To cope with modern

developments,

especially in nuclear

physics research, this

textbook presents

nuclear and particle

physics from a

unifying point of view.

The first part,

Analysis, is devoted to

disentangling the

substructure of matter.

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Introduction To

The Physical

Concepts 5th

Edition

The second part, Synthesis, shows how the elementary particles may be combined to build hadrons and nuclei. A section on neutrino oscillations and one on nuclear matter at high temperatures bridge the field of "nuclear and particle physics" and "modern astrophysics and

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Nuclei An

Introduction To

also covered. This

concise text has

become a standard

reference for

advanced and

undergraduate

courses.

This clear and concise

introduction to nuclear

physics provides an

excellent basis for a

core undergraduate

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course in this area.

The book opens by

setting nuclear

physics in the context

of elementary particle

physics and then

shows how simple

models can provide

an understanding of

the properties of

nuclei, both in their

ground states and

excited states, and

also of the nature of

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Introduction To

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nuclear reactions. The book also includes chapters on nuclear fission, its application in nuclear power reactors, the role of nuclear physics in energy production and nucleosynthesis in stars. This second edition contains several additional topics: muon-catalysed fusion, the

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Introduction To
physics of

supernovae, neutrino

mass and neutrino

oscillations, and the

biological effects of

radiation. A

knowledge of basic

quantum mechanics

and special relativity

is assumed.

Appendices deal with

other more

specialized topics.

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Each chapter ends with a set of problems

for which outline

solutions are

provided.

Timely and engaging,

AN INTRODUCTION

TO THE PHYSICS OF

NUCLEI AND

PARTICLES *focuses*

on one of the most

exciting areas of

physics. Author

Richard Dunlap has

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Introduction To

The Physical

Concepts 6th

Edition

taught this course for the last ten

years—during the last two of which he used this text successfully in his own classroom.

The author designed this text to provide flexibility and freedom for instructors

teaching a one-semester course by including a wealth of problems as well as

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approximately 20% more material than is

necessary for the

average 14-week

course. In order to

ensure that the book

is up-to-date and

interesting for the

students, the author

has included recent

research results

whenever possible

and has presented

data from ongoing

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experiments. This is particularly relevant

for fields in which

there is considerable

current research

activity, such as

neutrino masses and

oscillations, quark

masses and

controlled fusion.

The Basics of Nuclear

and Particle Physics

An Introduction to

Theoretical Particle

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Physics

Introduction To

Particles and Nuclei

Introduction to

Elementary Particles

This thoroughly revised book, now in its Fourth Edition, continues to provide a comprehensive introduction to this increasingly important area of nuclear and particle

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physics. It combines coverage of basic concepts, principles and applications, along with the latest developments.

Beginning with the historical developments of the subject, properties and constituents of the nucleus, quantitative facts

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about nucleus, etc., the book moves on to give insights into nuclear models, phenomenon of radioactivity and its applications in various fields, nuclear reactions including reactions in the Sun and stars, photoelectric and Compton

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effects, pair
creation, different
particle accelerators
and radiation
detectors. UNIQUE

FEATURES •

Contains actual
experimental data •

Large number of
solved problems to

help students

comprehend the

concepts with ease

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Editions'

- Provides unsolved problems with answers and review questions to test the students'

comprehension of the subject NEW TO THE FOURTH

EDITION • Some sections have been revised and enlarged to enhance their

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comprehension,
Introduction To
such as the neutron

The Physical
activation analysis,

Concepts 6th
scintillation and

HPGe detectors •

Includes a list of

accelerators •

Provides several

new solved and

unsolved problems

TARGET

AUDIENCE •

B.Sc./M.Sc.

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(Physics)

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of nuclear and

particle physics. The

first part, Analysis,

is devoted to

disentangling the

substructure of

matter. This part

shows that

experiments

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designed to uncover
the substructures of
nuclei and nucleons

have a similar

conceptual basis,

and lead to the

present picture of all
matter being built

out of a small

number of

elementary building

blocks and a small

number of

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fundamental interactions. The second part, Synthesis, shows how the elementary particles may be combined to build hadrons and nuclei. The fundamental interactions responsible for the forces in all systems become less and

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less evident in increasingly complex systems.

Such systems are in fact dominated by many-body phenomena. A

section on neutrino oscillations and one on nuclear matter at high temperatures bridge the field of "nuclear and particle

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physics" and
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"modern
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astrophysics and
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cosmology." The
Edition
fourth edition
includes new
developments, in
particular a new
section on the
double beta decay
including a
discussion of the
possibility of a

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neutrinoless decay
and its implications

for the standard

model. This concise

text, translated into

many languages,

has become a

standard reference

for advanced and

undergraduate

courses.

An Introduction to

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PHYSICS, FOURTH
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An Introduction