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# Radiation Detection And Measurement Knoll 4th Edition

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*Radiation  
Detection And  
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**SHEPARD COHEN**

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*Handbook of Particle*

*Detection and Imaging*  
Walter de Gruyter GmbH  
& Co KG

This book provides a comprehensive yet accessible overview of all relevant topics in the field of radiation protection (health physics). The text is organized to introduce the reader to basic principles of radiation emission and propagation, to review current knowledge and historical aspects of the biological effects of radiation, and to cover important operational topics such as radiation shielding and dosimetry. The author's website contains materials for instructors

including PowerPoint slides for lectures and worked-out solutions to end-of-chapter exercises. The book serves as an essential handbook for practicing health physics professionals. Elsevier Scintillation Dosimetry delivers a comprehensive introduction to plastic scintillation dosimetry, covering everything from basic radiation dosimetry concepts to plastic scintillating fiber optics. Comprised of chapters authored by leading experts in the medical

physics community, the book: Discusses a broad range of technical implementations, from point source dosimetry scaling to 3D-volumetric and 4D-scintillation dosimetry Addresses a wide scope of clinical applications, from machine quality assurance to small-field and in vivo dosimetry Examines related optical techniques, such as optically stimulated luminescence (OSL) or Čerenkov luminescence Thus, Scintillation Dosimetry provides an

authoritative reference for detailed, state-of-the-art information on plastic scintillation dosimetry and its use in the field of radiation dosimetry.

**Handbook of Drug Metabolism, Third Edition** John Wiley & Sons

This text on radiation detection and measurement is a response to numerous requests expressed by students at various universities, in which the most popularly used books do not provide adequate background material, nor explain

matters in understandable terms. This work provides a modern overview of radiation detection devices and radiation measurement methods. The topics selected in the book have been selected on the basis of the author's many years of experience designing radiation detectors and teaching radiation detection and measurement in a classroom environment.

**Volume 20** Cambridge University Press  
Radiation Detection and Measurement John Wiley &

Sons

**Introduction to Health Physics, Fifth Edition**

Oxford University Press  
A straightforward presentation of the broad concepts underlying radiological physics and radiation dosimetry for the graduate-level student. Covers photon and neutron attenuation, radiation and charged particle equilibrium, interactions of photons and charged particles with matter, radiotherapy dosimetry, as well as photographic, calorimetric, chemical,

and thermoluminescence dosimetry. Includes many new derivations, such as Kramers X-ray spectrum, as well as topics that have not been thoroughly analyzed in other texts, such as broad-beam attenuation and geometrics, and the reciprocity theorem. Subjects are laid out in a logical sequence, making the topics easier for students to follow. Supplemented with numerous diagrams and tables.

Radiation Detection John Wiley & Sons

This is the resource that engineers turn to in the study of radiation detection. The fourth edition takes into account the technical developments that continue to enhance the instruments and techniques available for the detection and spectroscopy of ionizing radiation. New coverage is presented on ROC curves, micropattern gas detectors, new sensors for scintillation light, and the excess noise factor. Revised discussions are also included on TLDs and

cryogenic spectrometers, radiation backgrounds, and the VME standard. Engineers will gain a strong understanding of the field with this updated book.

Radiation Detection And Measurement: Wiley-VCH

Written by established experts in the field, this book features in-depth discussions of proven scientific principles, current trends, and applications of nuclear chemistry to the sciences and engineering. • Provides up-to-date coverage of the latest

research and examines the theoretical and practical aspects of nuclear and radiochemistry • Presents the basic physical principles of nuclear and radiochemistry in a succinct fashion, requiring no basic knowledge of quantum mechanics • Adds discussion of math tools and simulations to demonstrate various phenomena, new chapters on Nuclear Medicine, Nuclear Forensics and Particle Physics, and updates to all other chapters • Includes

additional in-chapter sample problems with solutions to help students

- Reviews of 1st edition: "... an authoritative, comprehensive but succinct, state-of-the-art textbook ...." (The Chemical Educator) and "...an excellent resource for libraries and laboratories supporting programs requiring familiarity with nuclear processes ..." (CHOICE)

An Introduction to the Physics of Nuclear Medicine CRC Press

This new edition of the methods and

instrumentation used in the detection of ionizing radiation has been revised and updated to reflect recent advances. It covers modern engineering practice, provides useful design information and contains an up-to-date review of the literature.

Solutions Manual to Accompany Radiation Detection and Measurement Springer

Comprehensive overview of the spectroscopic, mineralogical, and geochemical techniques used in planetary remote sensing.

## A How-to Approach

Morgan & Claypool  
Publishers

A dynamic and comprehensive overview of the field of health physics This trusted, one-of-a-kind guide delivers authoritative and succinctly written coverage of the entire field of health physics including the biological basis for radiation safety standards, radioactivity, nuclear reactors, radioactive waste, and non-ionizing radiation, as well as radiation dosimetry, radiation

instrumentation, and principles of radiation protection. This thorough overview of need-to-know topics, from a review of physical principles to a useful look at the interaction of radiation with matter, offers a problem-solving approach that will serve readers throughout their careers. More than 470 "Homework Problems" and 175+ "Example Problems" Essential background material on quantitative risk assessment for radiation exposure Unique

Integration of industrial hygiene with radiation safety Authoritative radiation safety and environmental health coverage that supports the International Commission on Radiological Protection's standards for specific populations – now including ICRP 130 recommendations High-yield appendices to expand comprehension of chapter material Essential coverage of non-ionizing radiation, lasers and microwaves, computer use in dose calculation,

and dose limit recommendations NEW to this edition! Expanded information on tissue and radiation weighting factors, advances in detectors, and the Fukushima accident

**A How-to Approach** John Wiley & Sons Incorporated

The Theory and Practice of Scintillation Counting is a comprehensive account of the theory and practice of scintillation counting. This text covers the study of the scintillation process, which is concerned with the interactions of radiation

and matter; the design of the scintillation counter; and the wide range of applications of scintillation counters in pure and applied science. The book is easy to read despite the complex nature of the subject it attempts to discuss. It is organized such that the first five chapters illustrate the fundamental concepts of scintillation counting. Chapters 6 to 10 detail the properties and applications of organic scintillators, while the next four chapters discuss inorganic

scintillators. The last two chapters provide a review of some outstanding problems and a postscript. Nuclear physicists, radiation technologists, and postgraduate students of nuclear physics will find the book a good reference material.

[Airborne Radioactive Discharges and Human Health Effects: An Introduction](#) Springer

Science & Business Media

Radiation detection is important in many fields, and it poses significant challenges for instrument

designers. Radiation detection instruments, particularly for nuclear decommissioning and security applications, are required to operate in unknown environments and should detect and characterise radiation fields in real time. This book covers both theory and practice, and it solicits recent advances in radiation detection, with a particular focus on radiation detection instrument design, real-time data processing, radiation simulation and experimental work, robot

design, control systems, task planning and radiation shielding.  
*Radioactivity and Its Measurement* National Academies Press  
 A clear, concise, comprehensive review of detectors of high-energy particles and radiation; thoroughly revised and updated.  
*Concepts, Methods and Devices* Springer Science & Business Media  
 This is the 20th Volume in the series Memorial Tributes compiled by the National Academy of Engineering as a personal

remembrance of the lives and outstanding achievements of its members and foreign associates. These volumes are intended to stand as an enduring record of the many contributions of engineers and engineering to the benefit of humankind. In most cases, the authors of the tributes are contemporaries or colleagues who had personal knowledge of the interests and the engineering accomplishments of the deceased. Through its



members and foreign associates, the Academy carries out the responsibilities for which it was established in 1964. Under the charter of the National Academy of Sciences, the National Academy of Engineering was formed as a parallel organization of outstanding engineers. Members are elected on the basis of significant contributions to engineering theory and practice and to the literature of engineering or on the basis of demonstrated unusual

accomplishments in the pioneering of new and developing fields of technology. The National Academies share a responsibility to advise the federal government on matters of science and technology. The expertise and credibility that the National Academy of Engineering brings to that task stem directly from the abilities, interests, and achievements of our members and foreign associates, our colleagues and friends, whose special gifts we remember in this book.

Design and Deployment of Sensors and Detectors  
CRC Press

Radiation Detection: Concepts, Methods, and Devices provides a modern overview of radiation detection devices and radiation measurement methods. The book topics have been selected on the basis of the authors' many years of experience designing radiation detectors and teaching radiation detection and measurement in a classroom environment. This book is designed to

give the reader more than a glimpse at radiation detection devices and a few packaged equations. Rather it seeks to provide an understanding that allows the reader to choose the appropriate detection technology for a particular application, to design detectors, and to competently perform radiation measurements. The authors describe assumptions used to derive frequently encountered equations used in radiation detection and measurement, thereby

providing insight when and when not to apply the many approaches used in different aspects of radiation detection. Detailed in many of the chapters are specific aspects of radiation detectors, including comprehensive reviews of the historical development and current state of each topic. Such a review necessarily entails citations to many of the important discoveries, providing a resource to find quickly additional and more detailed information. This book

generally has five main themes: Physics and Electrostatics needed to Design Radiation Detectors Properties and Design of Common Radiation Detectors Description and Modeling of the Different Types of Radiation Detectors Radiation Measurements and Subsequent Analysis Introductory Electronics Used for Radiation Detectors Topics covered include atomic and nuclear physics, radiation interactions, sources of radiation, and background radiation. Detector

operation is addressed with chapters on radiation counting statistics, radiation source and detector effects, electrostatics for signal generation, solid-state and semiconductor physics, background radiations, and radiation counting and spectroscopy. Detectors for gamma-rays, charged-particles, and neutrons are detailed in chapters on gas-filled, scintillator, semiconductor, thermoluminescence and optically stimulated luminescence,

photographic film, and a variety of other detection devices.

*Feynman Lectures On Gravitation* Elsevier Health Sciences

This book describes the fundamentals of particle detectors as well as their applications. Detector development is an important part of nuclear, particle and astroparticle physics, and through its applications in radiation imaging, it paves the way for advancements in the biomedical and materials sciences. Knowledge in detector physics is one of

the required skills of an experimental physicist in these fields. The breadth of knowledge required for detector development comprises many areas of physics and technology, starting from interactions of particles with matter, gas- and solid-state physics, over charge transport and signal development, to elements of microelectronics. The book's aim is to describe the fundamentals of detectors and their different variants and implementations as clearly as possible and as

deeply as needed for a thorough understanding. While this comprehensive opus contains all the materials taught in experimental particle physics lectures or modules addressing detector physics at the Master's level, it also goes well beyond these basic requirements. This is an essential text for students who want to deepen their knowledge in this field. It is also a highly useful guide for lecturers and scientists looking for a starting point for detector development work.

**Particle Detectors** Wiley Nuclear and radioactive agents are considerable concerns especially after the early 1990s and more attention has been focused on the radiation detection technologies. This book comprises the selected presentations of NATO Advanced Training Course held 26-30 May 2008 in Mugla, Turkey. The contributions represent a wide range of documents related to control, monitoring and measurement methods of nuclear / radioactive isotopes and agents for

both fundamental and applied works dealing with their use for different purposes. This book presents environmental data from many locations of different countries and also contains the contributions in the detection/monitoring programs of some authors from CIS countries. The basic goal of this book is to deal with recent developments and applications of environmental monitoring and measurement techniques of environmental

radionuclides and nuclear agents as well as the auxiliary techniques. The many recent examples contributed by authors will be useful in monitoring/ measurement studies of radioactive/nuclear agents in the present environment, and can help, not only in carrying out outdoor and laboratory experiments, but also in protection of possible sources of radionuclides and nuclear agents. Especially the contributions of experts and specialists involved in

this book assured the highest level of knowledge in the field of techniques for the detection of radioactive and nuclear agents. Introduction to Radiological Physics and Radiation Dosimetry Springer Science & Business Media Begins with a description of the discovery of radioactivity and the historic research of such pioneers as the Curies and Rutherford. After a discussion of the interactions of  $\alpha$ ,  $\beta$ , and  $\gamma$  rays with

matter, the energetics of the different modes of nuclear disintegration are considered in relation to the Einstein mass-energy relationship as applied to radioactive transformations. Radiation detectors and radioactivity measurements are also discussed Radiation Sensing John Wiley & Sons Starting from basic principles, this book describes the rapidly growing field of modern semiconductor detectors used for energy and

position measurement radiation. The author, whose own contributions to these developments have been significant, explains the working principles of semiconductor radiation detectors in an intuitive way. Broad coverage is also given to electronic signal readout and to the subject of radiation damage.

*Radiation Detection and Measurement* CRC Press  
This book presents an overview of the physics of radiation detection and its applications. It covers the

origins and properties of different kinds of ionizing radiation, their detection and measurement, and the procedures used to protect people and the environment from their potentially harmful effects. It details the experimental techniques and instrumentation used in different detection systems in a very practical way without sacrificing the physics content. It provides useful formulae and explains methodologies to solve problems related to radiation measurements.

With abundance of worked-out examples and end-of-chapter problems, this book enables the reader to understand the underlying physical principles and their applications. Detailed discussions on different detection media, such as gases, liquids, liquefied gases, semiconductors, and scintillators make this book an excellent source of information for students as well as professionals working in related fields. Chapters on statistics, data analysis techniques, software for

data analysis, and data acquisition systems provide the reader with necessary skills to design and build practical systems and perform data

analysis. \* Covers the modern techniques involved in detection and measurement of radiation and the underlying physical principles \* Illustrates theoretical and

practical details with an abundance of practical, worked-out examples \* Provides practice problems at the end of each chapter