

Introduction To Radiological Physics And Radiation Dosimetry

The Physics of Radiation Therapy *Fundamental Physics of Radiology* *Physics for Radiation Protection* *A Primer in Applied Radiation Physics* *Nuclear Radiation Physics* *The Basic Physics of Radiation Therapy* *Physics of Nuclear Radiations* *The Physics of Radiation Protection* *Physics for Radiation Protection* *Radioisotope and Radiation Physics* *Radiation Protection in Medical Physics* *Exercises with Solutions in Radiation Physics* *Radiation Biophysics* *Clinical Radiotherapy Physics* *Blackburn's Introduction to Clinical Radiation Therapy Physics* *Principles of Radiation Protection* *Physics for Clinical Oncology* *Interaction of Radiation with Matter* *Radiation physics with applications in medicine and biology* *Elementary Radiation Physics* *Harold Elford Johns W. J. Meredith James E. Martin F. A. Smith Ralph Eugene Lapp Joseph Selman Chary Rangacharyulu James S. Martin James E. Martin M Miladjenovic Yves Lemoigne Bo N. Nilsson Edward L. Alpen Subramania Jayaraman Ben Blackburn Karl Ziegler Morgan Amen Sibtain Hooshang Nikjoo Norman A. Dyson George Samuel Hurst*

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a practical guide to the basic physics that radiation protection professionals need a much needed working resource for health physicists and other radiation protection professionals this volume presents clear thorough up to date explanations of the basic physics necessary to address real world problems in radiation protection designed for readers with limited as well as basic science backgrounds physics for radiation protection emphasizes applied concepts and carefully illustrates all topics through examples as well as practice problems physics for radiation protection draws substantially on current resource data available for health physics use providing decay schemes and emission energies for approximately 100 of the most common radionuclides encountered by practitioners excerpts of the chart of the nuclides activation cross sections fission yields fission product chains photon attenuation coefficients and nuclear masses are also provided coverage includes the atom as an energy system an overview of the major discoveries in radiation physics extensive discussion of radioactivity including sources and materials nuclear interactions and processes of radiation dose calculational methods for radiation exposure dose and shielding nuclear fission and production of activation and fission products specialty topics ranging from nuclear criticality and applied statistics to x rays extensive and current resource data cross referenced to standard compendiums extensive appendices and more than 400 figures this complete discussion of the basic concepts allows readers to advance their professional skills

this book deals with the principal areas of activity in radiation physics although the basic descriptions of theory and practice are presented in a format which is suitable mainly as a revision text for undergraduate and postgraduate students the book also serves as an introduction to the field which will be of interest to other informed workers detailed treatment is foregone in the interests of a comprehensive survey the book has evolved from lectures given in the university of london msc course on radiation physics and from undergraduate lectures given at queen mary and westfield college industrial as well as medical aspects of the field are considered

this text makes the physics of nuclear radiations accessible to students with a basic background in physics and mathematics rather than convince students one way or the other about the hazards of nuclear radiations the text empowers them with tools to calculate and assess nuclear radiations and their impact it discusses the meaning behind mathematical formulae as well as the areas in which the equations can be applied coverage includes archeology health and medical physics applications

a highly practical reference for health physicists and other professionals addressing practical problems in radiation protection this new edition has been completely revised updated and supplemented by such new sections as log normal distribution and digital radiography as well as new chapters on internal radiation dose and the environmental transport of radionuclides designed for readers with limited as well as basic science backgrounds the handbook presents clear thorough and up to date explanations of the basic physics necessary it provides an overview of the major discoveries in radiation physics plus extensive discussion of radioactivity including sources and materials as well as calculational methods for radiation exposure comprehensive appendices and more than 400 figures the text draws substantially on current resource data available which is cross referenced to standard compendiums providing decay schemes and emission energies for approximately 100 of the most common radionuclides encountered by practitioners excerpts from the chart of the nuclides activation cross sections fission yields fission product chains photon attenuation coefficients and nuclear masses are also provided throughout the author emphasizes applied concepts and carefully illustrates all topics using real world examples as well as exercises a much needed working resource for health physicists and other radiation protection professionals

radioisotope and radiation physics an introduction is based on lectures delivered on a course in the use of radioactive isotopes the course is organized by the b kidric institute of nuclear sciences in belgrade the book presents the fundamental concepts on the use of radioisotopes it aims to help the reader handle the quantitative data given in specialized handbooks and promote further reading the subjects covered in the text include the feynman diagrams and virtual particles the phenomena of collisions between particles and atomic systems and the penetration of alpha beta and gamma radiation the text is intended to professionals in other fields who are interested in the study of radioisotopes and radiation who only has a very rudimentary background in physics

this book introduces the fundamental aspects of radiation protection in medical physics and covers three main themes general radiation protection principles radiobiology principles radiation protection in hospital medical physics each of these topics is developed by analysing the underlying physics principles and their implementation quality and safety aspects clinical performance and recent advances in the field some issues specific to the individual techniques are also treated e g calculation of patient dose as well as that of workers in hospital optimisation of equipment used shielding design of radiation facilities radiation in oncology such as use of brachytherapy in gynecology or interventional procedures all topics are presented with didactical language and style making this book an appropriate reference for students and professionals seeking a comprehensive introduction to the field as well as a reliable overview of the most recent developments

the textbook begins with exercises related to radioactive sources and decay schemes the problems covered include series decay and how to determine the frequency and energy of emitted particles in disintegrations the next chapter deals with the interaction of ionizing radiation including the treatment of photons and charged particles the main focus is on applications based on the knowledge of interaction to be used in subsequent work and courses the textbook then examines detectors and measurements including both counting statistics and properties of pulse detectors the chapter that follows is dedicated to dosimetry which is a major subject in medical radiation physics it covers theoretical applications such as different equilibrium situations and cavity theories as well as experimental dosimetry including ionization chambers and solid state and liquid dosimeters a shorter chapter deals with radiobiology where different cell survival models are considered the last chapter concerns radiation protection and health physics both radioecology and radiation shielding calculations are covered the textbook includes tables to simplify the solutions of the exercises but the reader is mainly referred to important websites for importing necessary data

this newly revised and updated edition of radiation biophysics provides an in depth description of the physics and chemistry of radiation and its effects on biological systems coverage begins with fundamental concepts of the physics of radiation and radioactivity then progresses through the chemistry and biology of the interaction of radiation with living systems the second edition of this highly praised text includes major revisions which reflect the rapid advances in the field new material covers recent developments in the fields of carcinogenesis dna repair molecular genetics and the molecular biology of oncogenes and tumor suppressor genes the book also includes extensive discussion of the practical impact of radiation on everyday life covers the fundamentals of radiation physics in a manner that is understandable to students and professionals with a limited physics background includes problem sets and exercises to aid both teachers and students discusses radioactivity internally deposited radionuclides and dosimetry analyzes the risks for occupational and non occupational workers exposed to radiation sources

this book provides an in depth introduction to radiotherapy physics the emphasis in much of the work is on the clinical aspects of the field uniquely useful for both the physicist and non physicist clinical radiotherapy physics gradually and sequentially develops each of its topics in clear concise language it includes important mathematical analyses yet is written so that these sections can be skipped if desired without compromising understanding the book is divided into seven parts covering basic physics parts i ii equipment for radiotherapy part iii radiation dosimetry parts iv v radiation treatment planning part vi and radiation safety and shielding part vii for radiation oncologists radiation therapists and clinical physicists

an introduction to the basic physics concepts routinely employed in radiation therapy treatment and dose planning based on a series of lectures by a well respected radiation physicist who died in 1986 the purpose of the text is to help residents in radiation

oncology become clinically competent as quickly as possible annotation c 2003 book news inc portland or booknews com

to be able to perform radiotherapy effectively oncologists and radiographers need to understand the physics behind it this book is the first on radiation physics written specifically for the needs of the practising oncology team

interaction of radiation with matter focuses on the physics of the interactions of ionizing radiation in living matter and the monte carlo simulation of radiation tracks clearly progressing from an elementary level to the state of the art the text explores the classical physics of track description as well as modern aspects based on condensed matter physics the first section of the book discusses the fundamentals of the radiation field in the second section the authors describe the cross sections for electrons and heavy ions the most important information needed for simulating radiation track at the molecular level the third section details the inelastic scattering and energy loss of charged particles in condensed media particularly liquid water the final section contains a large number of questions and problems to reinforce learning designed for radiation interaction courses this textbook is the ideal platform for teaching students in medical health physics and nuclear engineering it gives students a solid grounding in the physical understanding of radiation track structure in living matter enabling them to pursue further work in radiological physics and radiation dosimetry

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