

1. Record Nr.	UNINA9910597128603321
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Titolo	Monte Carlo N-Particle Simulations for Nuclear Detection and Safeguards : An Examples-Based Guide for Students and Practitioners
Pubbl/distr/stampa	2022 Cham : , : Springer International Publishing AG, , 2022 ©2022
ISBN	3-031-04129-1
Descrizione fisica	1 online resource (316 pages)
Classificazione	SCI013010SCI026000SCI040000SCI051000TEC009000TEC028000
Altri autori (Persone)	SwinhoeMartyn T FavalliAndrea
Disciplina	539.7
Soggetti	Nuclear physics
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Nota di bibliografia	Includes bibliographical references and index.
Nota di contenuto	Table of contents: Contents 4 Introduction 8 Section 1: Basic Concepts 26 1.1.8 Lattice Geometries 53 1.2.6 Electron stopping powers for coupled photon and electron problems . 57 1.2.7 Data and models for Ions and Charged Particles 61 1.2.8 Additional data diagnostics and recommendations 62 1.3 Sources 63 1.3.1 SDEF Fixed Sources .63 1.3.2 SDEF Source Distributions 66 1.3.3 SDEF Dependent Distributions: DS 69 1.3.4 Criticality Sources 71 1.3.5 Surface Source Read and Write (SSR, SSW) 77 1.3.6 Checking sources 87 1.4 Output and Tallies 87 1.4.1 Output Files 87 1.4.2 MCNP Estimators and Tally Types 93 DRAFT 5 1.4.3 Basic Tally Format 95 1.4.4 Special Tally Treatments 111 1.4.5 Pulse-Height Tallies. 128 1.4.6 Point Detectors and Next-Event Estimators 134 1.5 Plotting 143 1.5.1 Geometry Plotting and Command Files143 1.5.2 Cross Section plotting 145 1.5.3 Tally Plotting 150 1.5.4 Mesh, Radiography, and Ring Tallies 167 1.6 Statistics and Convergence 186 Section 2: Examples for nuclear safeguards applications 198 2.1 Example 1: Fuel Assembly in Water Tank 198 2.1.1 Description 198 2.1.2 Geometry description 203 2.1.3 Other data: sources, materials, tallies, and more 204 2.1.4 MCNP Output 206 2.2 Example 2: Coincidence Counter with F4 and F8 Tallies for Coincidence and Multiplicity Counting Rates 207 2.2.1 Description 207 2.2.2 Materials 212 2.2.3 Source 212 2.2.4 Tallies 213 2.2.5

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Sommario/riassunto

This open access book is a pedagogical, examples-based guide to using the Monte Carlo N-Particle (MCNP^a) code for nuclear safeguards and non-proliferation applications. The MCNP code, general-purpose software for particle transport simulations, is widely used in the field of nuclear safeguards and non-proliferation for numerous applications including detector design and calibration, and the study of scenarios such as measurement of fresh and spent fuel. This book fills a gap in the existing MCNP software literature by teaching MCNP software usage through detailed examples that were selected based on both student feedback and the real-world experience of the nuclear safeguards group at Los Alamos National Laboratory. MCNP input and output files are explained, and the technical details used in MCNP input file preparation are linked to the MCNP code manual. Benefiting from the authors' decades of experience in MCNP simulation, this book is essential reading for students, academic researchers, and practitioners whose work in nuclear physics or nuclear engineering is related to non-proliferation or nuclear safeguards. Each chapter comes with downloadable input files for the user to easily reproduce the examples in the text.