



Monte Carlo Calculations in Nuclear Medicine, Second Edition: Applications in Diagnostic Imaging (Series in Medical Physics and Biomedical Engineering)

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From first principles to current computer applications, **Monte Carlo Calculations in Nuclear Medicine, Second Edition: Applications in Diagnostic Imaging** covers the applications of Monte Carlo calculations in nuclear medicine and critically reviews them from a diagnostic perspective. Like the first edition, this book explains the Monte Carlo method and the principles behind SPECT and PET imaging, introduces the reader to some Monte Carlo software currently in use, and gives the reader a detailed idea of some possible applications of Monte Carlo in current research in SPECT and PET.

New chapters in this edition cover codes and applications in pre-clinical PET and SPECT. The book explains how Monte Carlo methods and software packages can be applied to evaluate scatter in SPECT and PET imaging, collimation, and image deterioration. A guide for researchers and students developing methods to improve image resolution, it also demonstrates how Monte Carlo techniques can be used to simulate complex imaging systems.

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Editorial Review

Review

"An excellent and concise introduction to the Monte Carlo method ... provides excellent coverage of the basic principles of Monte Carlo technique for the simulation of nuclear medicine imaging and the up-to-date advances of widely used, general purpose Monte Carlo transport codes as well as simulations dedicated to nuclear medicine. As stated in the preface of the book, this should be an excellent guideline for 'students at graduate and undergraduate levels, and as a reference book on the Monte Carlo method in diagnostic nuclear medicine.'"

?*Health Physics*, March 2014

Praise for the First Edition

... very interesting and useful ... many chapters [contain] ... very detailed information about ... methodology ... helpful discussion of ... underlying science and technology ... good breadth of applications and approaches ... extensive references. I recommend the book for the library shelf and for any researcher using or intending to use the Monte Carlo technique in this rapidly developing field.

?*Physics in Medicine & Biology*

... unique ... brings together the essential elements of the applications of MC techniques to diagnostic nuclear medicine ... a resource for the scientist ... valuable reference ... for the research student ... postgraduate courses could usefully use this as a recommended text. ... well edited to provide a uniformity of style and presentation. The result is a book which can be read from cover to cover. ... amply illustrated with relevant and helpful diagrams as well as extensive bibliographies ... should be on the bookshelves of both researchers and students of radionuclide imaging ...

?Peter Jarritt, *Scope*, Vol. 8, No. 1, March 1999

... a uniquely well-informed offering on the important topic of Monte Carlo modeling in the development and evaluation of diagnostic imaging systems ... eminently practical (... a vade mecum) for the medical physicist ... a very accessible introduction for those who are just entering the field ...

?Donald Herbert, Doody Publishing, December 1998

... successfully achieves its main objectives of describing Monte Carlo methods, outlining Monte Carlo software packages presented in the literature and covering significant applications in SPET and PET research.

?*European Journal of Nuclear Medicine*

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