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Altri autori (Persone)	SecoJoao VerhaegenFrank
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Nota di contenuto	pt. I. Monte Carlo fundamentals -- pt. II. Application of Monte Carlo techniques in radiation therapy.
Sommario/riassunto	Preface Monte Carlo simulation techniques made a slow entry in the field of radiotherapy in the late seventies. Since then they have gained enormous popularity, judging by the number of papers published and PhD degrees obtained on the topic. Calculation power has always been an issue, so initially only simple problems could be addressed. They led to insights, though, that could not have been obtained by any other method. Recently, fast forwarding some thirty years, Monte Carlo-based treatment planning tools have now begun to be available from some commercial treatment planning vendors, and it can be anticipated that a complete transition to Monte Carlo-based dose calculation methods may take place over the next decade. The progress of image-guided radiotherapy further advances the need for Monte Carlo simulations, in order to better understand and compute radiation dose from imaging devices and make full use of the four-dimensional information now available. Exciting new developments in in-beam imaging in light ion beams are now also being investigated vigorously. Many new discoveries await the use of Monte Carlo technique in

radiotherapy in the coming decades. The book addresses the application of the Monte Carlo particle transport simulation technique in radiation therapy, mostly focusing on external beam radiotherapy and brachytherapy. It includes a presentation of the mathematical and technical aspects of the technique in particle transport simulations. It gives practical guidance relevant for clinical use in radiation therapy, discussing modeling of medical linacs and other irradiation devices, issues specific to electron, photon, proton/particle beams, and brachytherapy, utilization in the optimization of treatment planning, radiation dosimetry--Provided by publisher.

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