

Contents

About the Series	vii
Preface.....	ix
Editors.....	xi
Contributors.....	xiii
1. Introduction to the Monte Carlo Method	1
<i>Michael Ljungberg</i>	
2. Variance Reduction Techniques	17
<i>David R. Haynor and Robert L. Harrison</i>	
3. Anthropomorphic Phantoms: Early Developments and Current Advances	31
<i>I. George Zubal and W. Paul Segars</i>	
4. The Gamma Camera: Basic Principles	45
<i>Sven-Erik Strand, Mikael Peterson, and Magnus Dahlbom</i>	
5. Positron Emission Tomography	69
<i>Kjell Erlandsson and Tomas Ohlsson</i>	
6. The SimSET Program	87
<i>Robert L. Harrison and Tom K. Lewellen</i>	
7. The SIMIND Monte Carlo Program	111
<i>Michael Ljungberg</i>	
8. GATE: A Toolkit for Monte Carlo Simulations in Tomography and Radiation Therapy	129
<i>Irène Buvat, Didier Benoit, and Sébastien Jan</i>	
9. The MCNP Monte Carlo Program	153
<i>Per Munck af Rosenschöld and Erik Larsson</i>	
10. The EGS Family of Code Systems.....	173
<i>Scott J. Wilderman and Yoshihito Namito</i>	
11. ASIM: An Analytic PET Simulator.....	201
<i>Brian F. Elston, Claude Comtat, Robert L. Harrison, and Paul Kinahan</i>	

12. Monte Carlo in SPECT Scatter Correction	221
<i>Kenneth F. Koral and Yuni K. Dewaraja</i>	
13. Monte Carlo in Quantitative 3D PET: Scatter.....	249
<i>Robert L. Harrison and Robert S. Miyaoka</i>	
14. Design of Molecular Imaging Systems Assisted by the Monte Carlo Methods	273
<i>Irène Buvat</i>	
15. Introduction to Task-Based Assessment of Image Quality for Investigators Employing Monte Carlo Simulation of Imaging Systems.....	287
<i>Michael A. King</i>	
16. Monte Carlo Method Applied in Nuclear Medicine Dosimetry	313
<i>Michael Ljungberg</i>	
Index	323