

Contents

Preface	iii
List of Symbols	vii
1. Introduction	1
1.1 Scope	1
1.2 Radiation Quantities	1
1.3 Dosimetric Applications	3
2. Basic Interactions of High Energy Particles with Matter	5
2.1 The Particles and Their Interactions	5
2.2 Electromagnetic Interactions of Charged Particles	7
2.3 The Interaction of Photons with Matter	14
2.4 The Electromagnetic Cascade	17
2.5 Hadronic Cascades	21
2.6 Nucleus–Nucleus Collisions	26
3. The Radiation Environments of High Energy Accelerators	28
3.1 Introduction	28
3.2 Prompt Radiation Fields Near Accelerators	28
3.3 Prompt Radiation Environment at Large Distances from Accelerators	35
3.4 Induced Radioactivity	36
4. The Radiation Environment in Space and At Supersonic Aircraft Altitudes	39
4.1 Introduction	39
4.2 The Radiation Environment in Space	39
4.3 Radiation Environment at Supersonic Aircraft Altitudes . . .	41
5. Radiation Dosimetry	42
5.1 Introduction	42
5.2 Dosimetry for Radiation Protection	42
Appendix Stopping Powers for Protons	52
References	60
ICRU Reports	71
Index	73

