

Table of Contents

Preface

vii

part **1** **Foundations of Atomic and Nuclear Physics**

1	Elements of Electricity and Magnetism	<i>3</i>
2	Charged Atomic Particles	<i>30</i>
3	The Nuclear Atom	<i>75</i>
4	Electromagnetic Radiation	<i>97</i>
5	X-Rays	<i>121</i>
6	Waves and Particles	<i>166</i>

part **2** **The Extranuclear Structure of the Atom**

7	The Hydrogen Atom	<i>205</i>
8	Optical Spectra and Electron Distribution	<i>233</i>
9	X-Ray Spectra	<i>285</i>

part **3** **Nuclear Physics**

10	Natural Radioactivity	303
11	Disintegration of Nuclei	331
12	Nuclear Processes	372
13	Nuclear Fission	401
14	Fundamental Particles	431
15	New Elements and Isotopes	475
16	Particle Accelerators	485

Appendixes

I	Values of Some Physical Constants	511
II	Atomic Weights of the Elements	512
III	Periodic Table of the Elements	513
IV	Table of Isotopic Masses	514
V	Table of Naturally Occurring Isotopes	522
VI	Path of an Alpha Particle in a Coulomb Field of Force	529
VII	Derivation of the Equations for the Compton Effect	534
VIII	Evaluation of $\int p_r dr = n_r h$	538
	<i>Index</i>	543