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Exposure; VI. Quantities and Units for Use in Radiation Protection; A. Quality Factor, Q; B. Dose Equivalent, H; C. Specification of Ambient Radiation Levels
CHAPTER 3 EXPONENTIAL ATTENUATIONI. Introduction; II. Simple Exponential Attenuation; III. Exponential Attenuation for Plural Modes of Absorption; IV. ""Narrow-Beam"" Attenuation of Uncharged Radiation; V. Broad-Beam Attenuation of Uncharged Radiation; VI. Some Broad-Beam Geometries; VII. Spectral Effects; VIII. The Buildup Factor; IX. The Reciprocity Theorem; CHAPTER 4 CHARGED-PARTICLE AND RADIATION EQUILIBRIA; I. Introduction; II. Radiation Equilibrium; III. Charged-Particle Equilibrium; A. CPE for Distributed Radioactive Sources
B. CPE for Indirectly Ionizing Radiation from External SourcesIV. CPE in the Measurement of Exposure; V. Relating Absorbed Dose to Exposure for X- and y-Rays; VI. Causes of CPE Failure in a Field of Indirectly Ionizing Radiation; A. Proximity to a Source; B. Proximity to a Boundary of lnhomogeneity in the Medium; C. High-Energy Radiation; VII. Transient Charged-Particle Equilibrium (TCPE); CHAPTER 5 ABSORBED DOSE IN RADIOACTIVE MEDIA; I. Introduction; II. Radioactive Disintegration Processes; A. Alpha Disintegration; B. Beta Disintegration; C. Electron-Capture (EC) Transitions
D. Internal Conversion vs. Y-Ray EmissionE. Tables for Dose Estimation in Appendix C; CHAPTER 6 RADIOACTIVE DECAY; I. Total Decay Constants; II. Partial Decay Constants; III. Units of Activity; IV. Mean Life and Half-Life; V. Radioactive Parent-Daughter Relationships; VI. Equilibria in Parent-Daughter Activities; A. Daughter Longer-Lived than Parent, 2 1; C. Only Daughter Much Shorter-Lived than Parent, 2 >>1; VII. Removal of Daughter Products; VIII. Radioactivation by Nuclear Interactions; IX. Exposure-Rate Constant
CHAPTER 7 GAMMA- AND X-RAY INTERACTIONS IN MATTER

Sommario/riassunto

A straightforward presentation of the broad concepts underlying radiological physics and radiation dosimetry for the graduate-level student. Covers photon and neutron attenuation, radiation and charged particle equilibrium, interactions of photons and charged particles with matter, radiotherapy dosimetry, as well as photographic, calorimetric, chemical, and thermoluminescence dosimetry. Includes many new derivations, such as Kramers X-ray spectrum, as well as topics that have not been thoroughly analyzed in other texts, such as broad-beam attenuation and geometrics, and the reciprocity theorem