1. Record Nr. UNINA9910824560003321 Autore Pavlinksy G. V Titolo Fundamentals of x-ray physics [[electronic resource] /] / G.V. Pavlinsky Cambridge, : Cambridge International Science Publishing, 2008 Pubbl/distr/stampa **ISBN** 1-282-05880-0 9786612058806 1-907343-62-8 1-904602-97-5 Descrizione fisica 1 online resource (259 p.) Disciplina 539.7222 X-rays Soggetti **Physics** Lingua di pubblicazione Inglese **Formato** Materiale a stampa Livello bibliografico Monografia Note generali Bibliographic Level Mode of Issuance: Monograph Nota di bibliografia Includes bibliographical references and index. Nota di contenuto Intro -- Contents -- Preface -- Introduction -- 1. Characteristic X-ray Radiation -- 1.1. Development of concepts of the atom structure --1.2. The equation for the energy of x-ray levels of the atom -- 1.3. Systematics of characteristic lines -- 1.4. Intensity of the lines of the characteristic spectrun -- 2. Bremsstrahlung -- 2.1. Spectral distribution of the intensity of bremsstrahlung -- 2.2. Spatial distribution of bremsstrahlung -- 2.3. Polarisation of bremsstrahlung -- 3. Sources of x-ray radiation -- 3.1. X-radiation excited by the electron beam. X-ray tubes -- 3.2. Excitation of x-radiation by the ion beam -- 3.2.1. Characteristic radiation -- 3.3. Radioactive sources of

1.2. The equation for the energy of x-ray levels of the atom -- 1.3. Systematics of characteristic lines -- 1.4. Intensity of the lines of the characteristic spectrun -- 2. Bremsstrahlung -- 2.1. Spectral distribution of the intensity of bremsstrahlung -- 2.2. Spatial distribution of bremsstrahlung -- 2.3. Polarisation of bremsstrahlung -- 3. Sources of x-ray radiation -- 3.1. X-radiation excited by the electron beam. X-ray tubes -- 3.2. Excitation of x-radiation by the ion beam -- 3.2.1. Characteristic radiation -- 3.3. Radioactive sources of x-ray radiation -- 3.4. Synchrotron - a source of x-ray radiation -- 3.5. X-ray radiation of high-temperature plasma -- 3.6. X-ray lasers -- 4. Absorption of x-ray radiation -- 4.1. Electronic, partial and atomic coefficients of absorption -- 4.2. Absorption jumps -- 4.3. Structure of absorption edges -- 4.4. Linear and mass coefficient of attenuation of x-ray radiation -- 5. Scattering of x-ray radiation -- 5.1. Scattering of x-ray radiation on atoms -- 5.3. Intensity of x-ray radiation scattered by a thick specimen -- 5.4. Scattering of x-ray radiation by ordered structures -- 5.5. Resonance combination scattering of x-ray radiation

-- 6. Refraction and reflection of x-ray radiation -- 6.1. Theoretical fundamentals of studying dispersion -- 6.2. Refraction of x-rays --6.3. Total external reflection of x-ray radiation -- 6.4. Interference of x-ray radiation -- 6.5. Practical application of the optical properties of x-ray radiation -- 7. Free electrons, formed in irradiated material. Bremsstrahlung of these electrons -- 7.1. Photoelectrons -- 7.2. Auger electrons -- 7.3. Recoil electrons (Compton electrons). 7.4. Bremsstrahlung of photoelectrons, Auger electrons and recoil electrons -- 7.5. Comparison of spectral distributions of bremsstrahlung of photo-, Auger and Compton electrons -- 8. X ray fluorescence -- 8.1. Intensity of x-ray fluorescence -- 8.2. Effect of the particle size on the intensity of x-ray fluorescence -- 8.3. Effect of the element composition of the specimen on the intensity of x-ray fluorescence -- 8.4. Dependence of the intensity of x-ray fluorescence on primary radiation wavelength -- 8.5. Process of excitation of x-ray fluorescence for the case in which the areas of absorption of primary radiation and formation of a fluorescent photon coincide -- 8.6. Processes of excitation of x-ray fluorescence for the case in which the areas of interaction of primary radiation and formation of the fluorescent photon differ -- 8.7. Selective absorption of primary radiation -- 8.8. Perturbing effect of elements on the intensity of x-ray fluorescence -- 8.9. Excitation of x-ray fluorescence by polychromatic primary radiation -- 8.10. Special features of the excitation of x-ray fluorescence of elements with low atomic numbers -- Conclusions --References -- Index.