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DESCRIPTION OF THE NATURE OF THE MOSSBAUER EFFECT MAIN PARAMETERS OF RESONANCE ABSORPTION SPECTRA; 1.1. INTRODUCTION; 1.2. THE NATURE AND PROBABILITY OF THE MOSSBAUER EFFECT; 1.3. EFFECTS OF DISPLACEMENT AND SPLITTING OF THE LINES. PARAMETERS OF MOSSBAUER SPECTRA; 1.4. THE WIDTH OF THE RESONANCE LINE; 1.5. THE STRUCTURE OF RESONANCE ABSORPTION CURVES OF NON-IDEAL CRYSTALS; 2.1. PRELIMINARY COMMENTS; 2.2. NON-EQUIVALENT POSITIONS OF RESONANT NUCLEI; 2.3. THE SUPERPOSITION PRINCIPLE

2.4. GENERALISED FORM OF THE RESONANCE ABSORPTION CURVE3. ELECTRICAL AND MAGNETIC HYPERFINE INTERACTIONS OF RESONANT NUCLEI IN METALS AND ALLOYS; 3.1. GENERAL CONSIDERATIONS; 3.2. EXPERIMENTAL DATA ON THE PERTURBATION OF THE CHARGE AND SPIN DENSITY IN CRYSTALS OF TRANSITION METALS IN DISSOLUTION OF IMPURITIES; 3.3. FERROMAGNETIC IMPURITY CRYSTALS BASED ON TRANSITION METALS; 3.4. HYPERFINE STRUCTURE OF MOSSBAUER SPECTRA OF DILUTED IRON-BASED SOLID SOLUTIONS; 3.5. ANTIFERROMAGNETICS AND NON-COLLINEAR MAGNETICS

4. STRUCTURE OF MOSSBAUER SPECTRA OF ALLOYS WITH LONG-RANGE AND SHORT-RANGE ATOMIC ORDER4.1. ON SPECIFICS OF INFORMATION OBTAINED IN CONNECTION WITH THE LOCAL-NUCLEAR NATURE OF THE METHOD; 4.2. ON DETERMINATION OF THE ORDER PARAMETERS; 4.3. VARIATION OF INTEGRAL INTENSITIES OF SPECTRA COMPONENTS IN THE FORMATION OF SHORT-RANGE AND LONG-RANGE ATOMIC ORDER IN SUBSTITUTIONAL SOLID SOLUTIONS; 4.4. ACCOUNTING FOR THE EFFECT OF REMOTE COORDINATION SPHERES IN THE PRESENCE OF ATOMIC ORDER

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5.2. EXAMPLES OF INVESTIGATION OF THE SHORT-RANGE ORDER. INTERATOMIC CORRELATIONS, LOCAL ATOMIC STRUCTURE, NON-IDEAL SOLID SOLUTIONS5.3. EXAMINATION OF THE MAGNETIC STRUCTURE OF ALLOYS; 6. MOSSBAUER SPECTROSCOPY OF ION-DOPED METALS AND ALLOYS; 6.1. MOSSBAUER EFFECT AS THE METHOD OF INVESTIGATION OF ION-DOPED MATERIALS; 6.2. EFFECT OF RADIATION DEFECTS ON THE PARAMETERS OF THE RIGIDITY OF INTERATOMIC BONDS; 6.3. LOCALISATION AND MOBILITY OF IMPLANTED ATOMS. THE STRUCTURE AND STABILITY OF FORMED RADIATION DEFECTS; 6.4. VARIATION OF THE COMPOSITION OF THE SURFACE LAYER OF MULTI-COMPONENT TARGETS

6.5. FORMATION AND DISSOLUTION OF PHASES, AMORPHISATION

Sommario/riassunto

The monograph indicates the key problems that have to be solved for the further development of the Mossbauer methods for analysis of the nuclear and magnetic structure of alloys, and offer solution variants for some of these problems based on the generalised results of a wide range of theoretical and experimental investigations, including original work by the author of the book and his colleagues.
