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Nota di contenuto	Cover; Title Page; Contents; Foreword; Chapter 1. Ultrasound Medical Imaging; 1.1. Introduction; 1.2. Physical principles of echography; 1.2.1. Ultrasound waves; 1.2.2. Wavefronts; 1.2.3. Stress/Strain relation; 1.2.4. Propagation equation; 1.2.5. Acoustic impedance; 1.2.6. Acoustic intensity; 1.2.7. Mechanical Index; 1.2.8. Generation, emission; 1.2.9. Resolution; 1.2.10. Propagation of a plane wave in a finite isotropic medium; 1.2.11. Propagation of a plane wave in a non-homogeneous medium; 1.2.12. Speckle; 1.2.13. Nonlinear waves; 1.2.14. Contrast agents; 1.3. Medical ultrasound systems 1.3.1. Principle 1.3.2. The different stages in image formation; 1.3.3. Ultrasound imaging probe; 1.3.4. Modes of imaging, B-mode and M-mode, and harmonic imaging modes; 1.3.5. Doppler imaging; 1.4. The US image; 1.4.1. Properties of speckle, echostructure and statistical laws; 1.4.2. Segmentation of US images; 1.4.3. Simulation of US images; 1.5. Recent advances in ultrasound imaging; 1.5.1. Generation/emission of ultrasounds; 1.5.2. Signal-and image processing; 1.5.3. Multimodal imaging; 1.6. A bright future for ultrasound imaging; 1.7. Bibliography; Chapter 2. Magnetic Resonance Imaging

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2.6.5. Bi-modal approach to MRI: the example of MR/PET
2.7. Bibliography; List of Authors; Index

Sommario/riassunto

This book describes the different principles and equipment used in medical imaging. The importance of medical imaging for diagnostics is rapidly increasing. A good working knowledge of all the different possible physical principles involved in medical imaging is now imperative. This book covers many of these principles including matter photon interactions, the principles of detectors, detectors and information processing for radiology, X-ray tomography, positron tomography, single photon tomography and optical tomography.
