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Nota di contenuto	X-ray Detectors in Medical Imaging -- Modelling spectroscopic performance of pixelated semiconductor detectors through Monte-Carlo simulation -- Status of DEXA Instrumentation Using Direct and Indirect Detectors -- CZT Detectors for Nuclear Medicine -- Positron Emission Tomography (PET) Imaging Based on Sub-Millimeter Pixelated CdZnTe Detectors -- Medical Photon-Counting CT – Status and Clinical Applications Review -- Multi-material decomposition (m-MD) based spectral imaging in photon-counting CT -- X-ray Multispectral CT Imaging by Projection Sequences Blind Separation based on Basis-effect or Basis-material decomposition -- Direct Iterative Basis Image Reconstruction Based on MAP-EM Algorithm for Spectral CT -- Linearly Polarized X-ray Fluorescence Computed Tomography with a Photon Counting Detector -- Detector shift iteration method for improving spatial resolution and suppressing pixel value distortion in direct and

indirect X-ray detectors -- A new method of estimating incident x-ray spectra with photon counting detectors using a limited number of energy bins with dedicated clinical x-ray imaging systems.

Sommario/riassunto

This book offers readers an overview of some of the most recent advances in the field of technology for X-ray medical imaging. Coverage includes both technology and applications in SPECT, PET and CT, with an in-depth review of the research topics from leading specialists in the field. Coverage includes conversion of the X-ray signal into analogue/digital value, as well as a review of CMOS chips for X-ray image sensors. Emphasis is on high-Z materials like CdTe, CZT and GaAs, since they offer the best implementation possibilities for direct conversion X-ray detectors. The discussion includes material challenges, detector operation physics and technology and readout integrated circuits required to detect signals processes by high-Z sensors. Authors contrast these emerging technologies with more established ones based on scintillator materials. This book is an excellent reference for people already working in the field as well as for people wishing to enter it. Provides coverage of a broad range of topics, from international experts in academia and industry; Includes in-depth analysis of how to optimize X-ray detection and electronics for X-ray detection; Introduces novel Theranostics and spectral Computed Tomography.