(Library ebook) MicroComputed Tomography: Methodology and Applications

MicroComputed Tomography: Methodology and Applications

Stuart R. Stock
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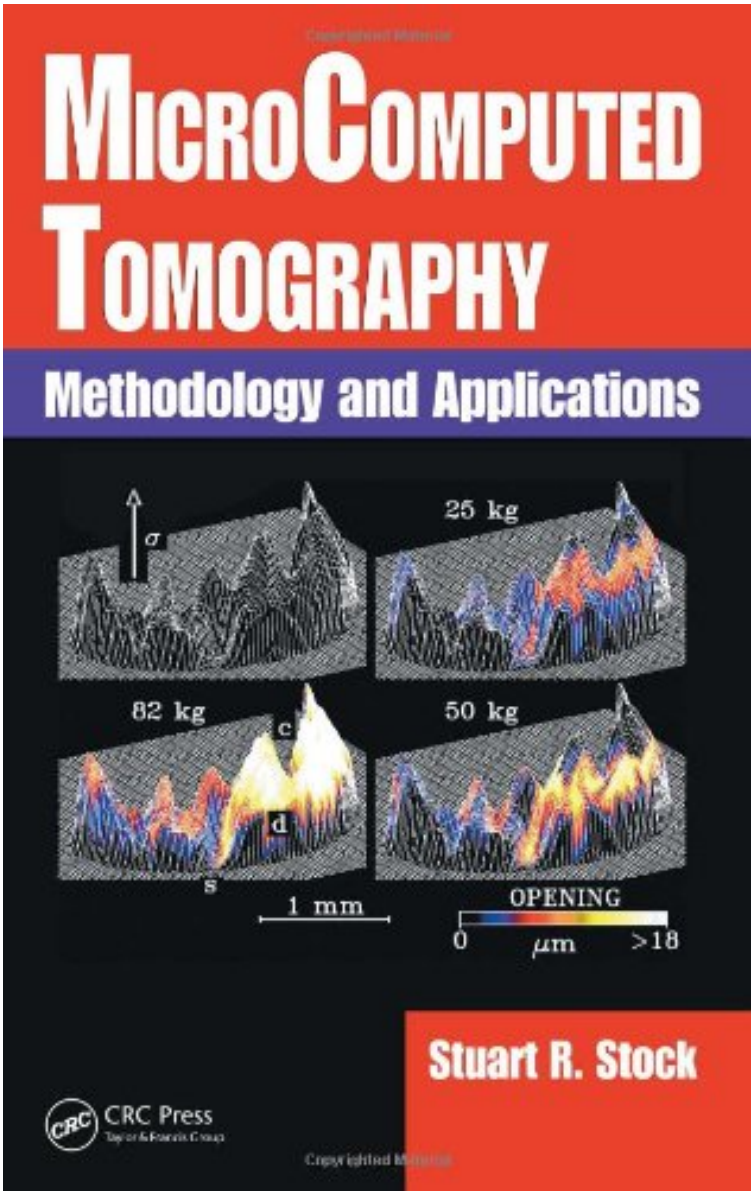

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#3446723 in Books CRC Press 2008-12-23Original language:EnglishPDF # 1 9.30 x 1.10 x 6.10l, 1.65 #File Name: 1420058762336 pages | File size: 21.Mb

Stuart R. Stock : MicroComputed Tomography: Methodology and Applications before purchasing it in order to gage whether or not it would be worth my time, and all praised MicroComputed Tomography: Methodology and Applications:

0 of 1 people found the following review helpful. A topic that should had been left to the expertsBy Sean HemingwayThere are issues with this book. The title: the use of the word "methodology" was not warranted in the

title, for example several references did a better job describing the physics and math of, say, reconstruction than the author did in this book. The word "methodology" was not an accurate description of the content of the book. The author ventured into several areas of technologies which are not his strength, specifically imaging, photonics, and applied math. The author had taken a broad technology and attempted to explain several of its topics as an expert in each. The result is a half-baked book leaving a lot to be desired.Ch1. Introduction: This reads like a previously used section of a proposal for a research grant - it reads like a sales pitch.Ch2. Fundamentals: As noted, the topics discussed here are not the author's strengths, The author scattered equations throughout the chapter without giving them the relevance and structure they deserve in the context of what he was trying to explain. For example, on page 17, the author proceeds with mentioning convolution as "the mathematical operation of smearing one feature over another feature" - aside from "smearing" being an unpleasant description of the convolution process, the author did not elaborate on how PSF and MTF are expressed in the set of 1D and 2D convolution equations. Later he states "The reader is directed to texts on microscopy for further details." without giving references. The chapter came out reading like a term paper by an advanced undergraduate who did not know how to tie the physics with the math. This chapter was better left out and references made to more authoritative sources. As such, the use of the word "methodology" in the title was not appropriate.Ch.3. Reconstruction from Projections: Again the author ventured into a discipline that is not his forte. His presentation of mathematical equations does not mesh smoothly with his verbal explanation, that is, tying the math with the physics, specifically when he tries to explain how the Fourier and inverse Fourier transforms are used. The author did not hesitate to use old references from 1978 and 1979, yet he did not cite Gabor Herman's "Image Reconstruction from Projections - The Fundamentals of Computerized Tomography", Academic Press, 1980, (republished in 2009 by Springer). In addition, the reconstruction is explained in Anton and Rorres' "Elementary Linear Algebra - Applications Version" 7th Ed. p. 685, 1994. An interesting observation is the similarity of Stock's Fig. 3.3 and the figures given in example 2 of Anton's Linear Algebra book (p. 695).It might had been wise for the author to publish only the chapters pertaining only to experimental work proper. The author is only a user of the instrument, and is limited in his work to the instrument's designed specifications and limitations. The book edited by Baruchel et alia a few years earlier (X-Ray Tomography in Material Science, 2000) is better structured and written because each topic is written by its own specialists.MicroComputed Tomography: Methodology and Applications

Due to the availability of commercial laboratory systems and the emergence of user facilities at synchrotron radiation sources, studies of microcomputed tomography or microCT have increased exponentially. MicroComputed Technology provides a complete introduction to the technology, describing how to use it effectively and understand its results. The first part of the book focuses on methodology, covering experimental methods, data analysis, and visualization approaches. The second part addresses various microCT applications, including porous solids, microstructural evolution, soft tissue studies, multimode studies, and indirect analyses. The author presents a sufficient amount of fundamental material so that those new to the field can develop a relative understanding of how to design their own microCT studies. One of the first full-length references dedicated to microCT, this book provides an accessible introduction to field, supplemented with application examples and color images.

About the AuthorNorthwestern University, Evanston, Illinois, USA