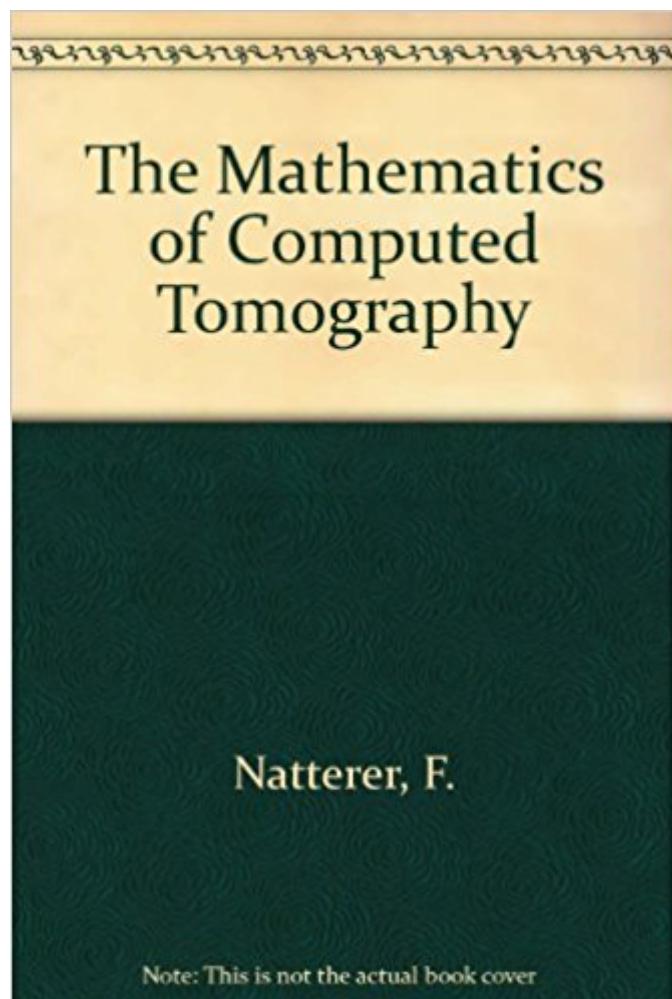


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The Mathematics Of Computerized Tomography



Synopsis

Details the reconstruction of a function from line or plane integrals, with special emphasis on applications in science, radiology and engineering. Both the relevant mathematical theory of the Radon transform and related transforms, and practical questions such as sampling, resolution, stability, and accuracy, are covered. Much space is given to the derivation, analysis and practical examination of reconstruction algorithms, both for standard problems and problems with incomplete data.

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Customer Reviews

This book provides a unified view of tomographic techniques, a common mathematical framework, and an in-depth treatment of reconstruction algorithms. It focuses on the reconstruction of a function from line or plane integrals, with special emphasis on applications in radiology, science, and engineering. --This text refers to the Paperback edition.

Details the reconstruction of a function from line or plane integrals, with special emphasis on applications in science, radiology and engineering. Both the relevant mathematical theory of the Radon transform and related transforms, and practical questions such as sampling, resolution, stability, and accuracy, are covered. Much space is given to the derivation, analysis and practical examination of reconstruction algorithms, both for standard problems and problems with incomplete data.

Well, there's not much to say about this classic work. It's a completely new slant on anything to do with signals, Fourier or Mellin.

For the student of the Radon transform and its many applications, this book is a must. It's all here: the Radon transform in a multidimensional setting, the X-ray transform (a closely related transform), general theorems for the Fourier transform of the Radon transform, and theorems on the range of the Radon transform. The author also covers sampling theorems, ill-posed problems, orthogonal functions, and tomography for incomplete sampling. He also offers much material on other allied transforms, the exponential Radon transform and the Radon transform for nonuniform attenuation, one of the major unsolved problems of mathematical physics. This book is also an example of how a minimal and succinct notation can actually affect the way one approaches the research and thinks about problems. This is worth the price of the book alone. Nowhere else will you find such clear, brief exposition of many difficult theorems associated with the Radon transform. Initially, it is difficult to learn the author's notation, but once this barrier has been surmounted, it is clear sailing. The author also demonstrates a depth of knowledge of many areas of mathematics.

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