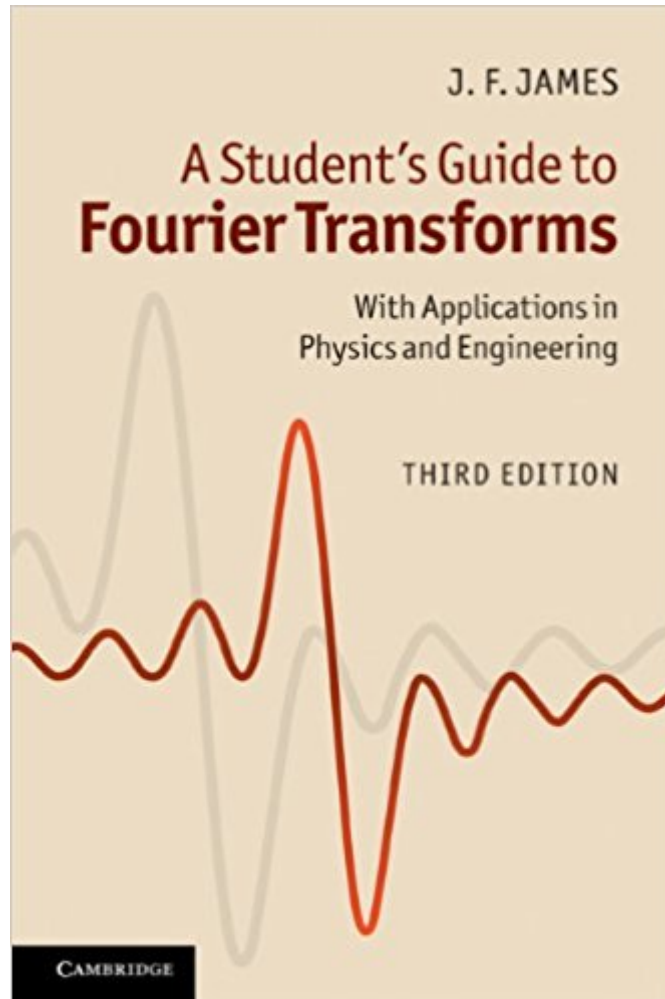# A Student's Guide To Fourier Transforms

Synopsis

Fourier transform theory is of central importance in a vast range of applications in physical science, engineering and applied mathematics. Providing a concise introduction to the theory and practice of Fourier transforms, this book is invaluable to students of physics, electrical and electronic engineering, and computer science. After a brief description of the basic ideas and theorems, the power of the technique is illustrated through applications in optics, spectroscopy, electronics and telecommunications. The rarely discussed but important field of multi-dimensional Fourier theory is covered, including a description of Computer Axial Tomography (CAT scanning). The book concludes by discussing digital methods, with particular attention to the Fast Fourier Transform and its implementation. This new edition has been revised to include new and interesting material, such as convolution with a sinusoid, coherence, the Michelson stellar interferometer and the van Cittert-Zernike theorem, Babinet's principle and dipole arrays.

Book Information

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Customer Reviews

This is a very brief but clear and easy to read to the Fourier transform.The book exposed some physics application tor the transform (Fraunhoffer diffraction, filters, interferometry, ...). The introducion to the Radon transform and to the Central Slice theorem is very light but is a very nice example of the n-dimensional Fourier transform.I recomed this book althougth as a student guide book (as the title says) there is a lack of end chapter exercises (with detailed solutions) that complement the theory.In my opiniÃ n the book also benefit if would include some computer aplication in a higth level language like Matlab.

I must agree with several of the other reviewers. The book assumes that the student knows too much about the subject. This would not be a good choice as a text for teaching a student about Fourier Analysis and transforms. If the reader has a real interest to learn the basics as well as the more in-depth the theorems, where they come from and why they work, a solid systematic approach can be found in the text by to Norman Morrison.

I've used this book since the first edition. As an acoustician, I use this as an introduction and a source of training assignments for new student researchers. It predates the other Student Guide books and wasn't written with the same intent. This book is in the long tradition of 100 page focussed introductions to mathematical subjects that used to be published by university presses. So don't criticize it for what it's not - it's not an introduction to supplement a course, instead accept it for what it is, it is a great introduction to Fourier transforms. If you want to learn about code, look elsewhere, if you want to gain insight and get a feel for what Fourier Transforms are about, start here. Once you've absorbed this you can go to Bracewell or Brigham to learn how to implement the methods.

The book is just a summary of the mathematics behind Fourier Analysis and Synthesis. Nothing too new here. Not what you are looking for if you want some help with software/computer applications. It's about 130 pages but you would be better off with a more extensive and thorough text. This is Fourier Lite.

A Student's Guide to Fourier Transforms An Introduction to Laplace Transforms and Fourier Series (Springer Undergraduate Mathematics Series) Fourier Transforms: Principles and Applications Harmonic Analysis: From Fourier to Wavelets (Student Mathematical Library) Signals, Systems, and Transforms Binary Polynomial Transforms and Non-Linear Digital Filters (Chapman & Hall/CRC

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