

ervation: The class of Calderon–Zygmund operators, as well as the pseudodifferential operators, can be very effectively treated with wavelet bases. Wavelet analysis has also proved to be a viable alternative to windowed Fourier methods in analysis and signal processing. Indeed, the underlying theory has served to unify many important ideas that previously were explored by independent disciplines.

Gerald Kaiser is a mathematical physicist whose contributions initially involved quantum mechanics but more recently come from wavelet theory. In *A Friendly Guide to Wavelets*, he seeks to address readers who may lack sophisticated mathematical backgrounds, and he succeeds quite well. Part I is easy to read and could stand on its own as a fine introduction to wavelet transforms. The material is organized into a hierarchy of increasing specificity from continuous wavelet transforms to generalized frames, discrete frames, multiresolution analyses and finally orthogonal expansions. There are also generous sections on continuous and discrete Fourier transforms, which appear immediately before the corresponding topics for wavelets. These serve as a warm-up to the notation and as a reminder of the mathematical tools with which wavelets are handled. At the beginning of each chapter is an abstract and a list of prerequisites, which can be used to guide an advanced reader past unnecessary material. This part should appeal to a very wide audience.

Part II contains Kaiser's personal contributions to the field. It goes far beyond a basic introduction and, while interesting, could safely be skipped by most readers. It seeks to unify the physics of electromagnetism and acoustics with the signal processing aspects of wavelet analysis. But the analogy between acoustics and electromagnetics is at times awkward and unfamiliar, and some acousticians may in fact find it rather strained.

The book quite adequately covers the material necessary for a one-semester course. For graduate physics and applied math majors it is probably just about right. It might take considerable effort to bring this book to engineering students; a number of supplementary examples, problems and projects would be required. There is almost no how-to information, such as code fragments and response to test signals, and the book is also quite weak on filter implementations and design. The bibliography gives a fair overview of the field, but a little more work could be done on the index for the next printing. Also, there are quite a few typos, some figures are poorly

labeled, and the book ends rather abruptly. On the other hand, it contains the first serious attempt to provide a cohesive set of homework problems on the subject—a highly nontrivial endeavor.

On the whole, I found this to be an excellent book. It is eminently more readable than the books by Ingrid Daubechies (*Ten Lectures on Wavelets*, SIAM, 1992) and Charles Chui (*An Introduction to Wavelets*, Academic, 1992), which might be considered the principal alternatives for textbooks on wavelets.

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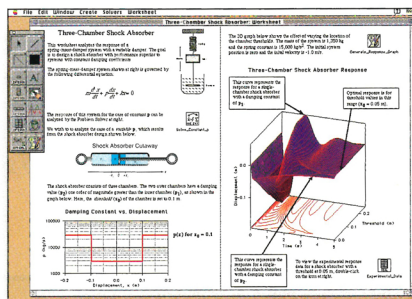
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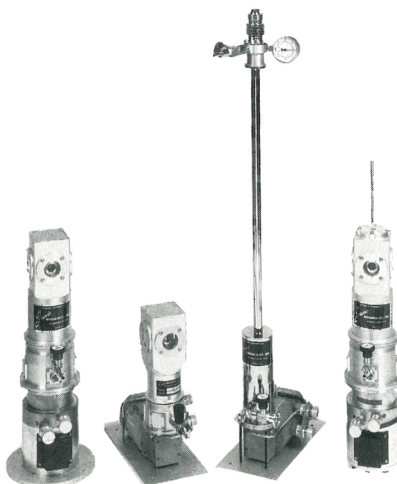
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