ready form, Springer must bear some responsibility for allowing it to mar the appearance of their celebrated series.

C. J. SMYTH

CHAMPENEY, D. C., *A handbook of Fourier theorems* (Cambridge University Press 1987) xii + 185 pp. 0 521 26503 7, £25.

This handbook is intended to assist postgraduates and research workers in the physical sciences, particularly communications and electronic engineering, who have met Fourier analysis and its applications in a non-rigorous way, and wish to find out the exact conditions under which particular results can be used. Its major part therefore consists of rigorous statements of important results in Fourier theory, together with explanatory comments and examples. This is preceded by chapters which introduce necessary mathematical ideas, for example Lebesgue integration, the inequalities of Hölder and Minkowski, and notions such as absolute and uniform continuity, and dominated and mean convergence. No proofs are given in the book, nor precise references for proofs of individual theorems, but there is a comprehensive bibliography accompanied by a summary detailing those books which cover the results of particular chapters.

As one would expect, the coverage of material is selective. There are a great many results on ideas associated with convolutions and products, and on convergence of Fourier series and integrals; the latter include results on convergence in L^p, and on $(C, 1)$ and Abel summability, together with many standard counterexamples. Fourier integrals are treated over some nine chapters, which include one on power spectra and Wiener's theorem, and three on generalised functions and their transforms; these are followed by two chapters listing analogous results for Fourier series and generalised Fourier series.

I have one or two minor reservations over notation, for example it seems perverse to use $*$ for complex conjugate as well as convolution, and I feel that a direct definition of measure would have been more illuminating than one defining it as the integral of a characteristic function, provided this function is in L, when no properties of functions in L have been proved. However let me stress the virtues, an excellent commentary throughout, with cross references and a good index, very good coverage in its chosen areas, and glimpses of other topics such as the Hilbert transform and almost periodic functions. As a reference book written in modern style, this handbook will have considerable value to a mathematician as well as to an engineer. It is beautifully printed and I found very few misprints.

PHILIP HEYWOOD

HARTE, R., *Invertibility and singularity for bounded linear operators* (Marcel Dekker Inc., New York and Basel, 1987) xii + 590 pp. 0 8247 7754 9, \$119.50.

This textbook provides not only a most comprehensive introduction to functional analysis but, in addition, contains accounts of Fredholm theory, multiparameter spectral theory and the complicated ideas of Joseph Taylor.

The various kinds of "singularity" which prevent an operator from being invertible are studied in detail. The text concentrates on two major theorems: namely, the open mapping theorem and the Hahn–Banach theorem. Completeness is introduced and several types of nonsingularity are studied. In particular their algebraic and topological characteristics are looked at and the transmission of these to subspaces, quotients and products. The Hahn–Banach theorem is followed by the dual space construction. It is indicated how nonsingularity behaves under the process of taking the dual. Two major constructions are described: namely, the extension of classical complex analysis to the vector-valued case and the "enlargement" of a normed space.

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