

Librería
Bonilla y Asociados
desde 1950



Título:

Autor:

Precio: \$726.22

Editorial:

Año: 2009

Tema:

Edición: 1ª

Sinopsis

ISBN: 9780821843246

Let f be a periodic measurable function and $x(n_k)$ an increasing sequence of positive integers. The authors study conditions under which the series $\sum_{k=1}^{\infty} C_k f(n_k x)$ converges in mean and for almost every x . There is a wide classical literature on this problem going back to the 30's, but the results for general f are much less complete than in the trigonometric case $f(x) = \sin x$. As it turns out, the convergence properties of $\sum_{k=1}^{\infty} c_k f(n_k x)$ in the general case are determined by a delicate interplay between the coefficient sequence (c_k) , the analytic properties of f and the growth speed and number-theoretic properties of (n_k) . In this paper the authors give a general study of this convergence problem, prove several new results and improve a number of old results in the field. They also study the case when the n_k are random and investigate the discrepancy the sequence $\{n_k x\} \bmod 1$.

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