

Fourier coefficients of continuous functions and functions of bounded variation

It is well known that the Fourier coefficients of continuous function with respect to classical orthonormal systems (trigonometric, Haar, Walsh,...) can be estimated via the moduli of continuity of the functions. However, not all orthonormal systems possess this property. We obtain necessary and sufficient conditions on orthonormal systems such that the Fourier coefficients of continuous functions with respect to these orthonormal systems can be estimated via moduli of continuity in a certain sense.

We study problems of the absolute convergence of Fourier series with respect to general orthonormal systems, for functions in certain classes. We can distinguish among all orthonormal systems those, for which the Fourier series of every function from Lip_1 converges absolutely.