

On the regularizations Fourier series of distributions

ABSTRACT

Fourier analysis has many applications in various science and technology. In most problem researchers have to analyze functions (data), which has some singularities. This makes some difficulties in Fourier analysis of singular functional. In these, harmonic analysis in the spaces of distributions can be applied.

Recently (see for instance [9]-[11]) interest in spectral expansions of distributions increased and number of research papers were published. Present work it devoted to convergence/summation and regularization of Fourier series of distributions in different topologies.

In multidimensional case, convergence essentially depends on methods of summation, i.e. on the definition of partial sums. Even δ -good defined partial sums may not supply convergence of Fourier series and in this case, some regularization of the partial sums is required.

Keyword: Fourier series; Summation methods; The Riesz means; Distributions; The Sobolev spaces