Texas Tech University. Joint Analysis and Applied Mathematics Seminar.

Equiconvergence of Expansions in Multiple Trigonometric Fourier Series and Fourier Integral in The Case of “Lacunary Sequence of Partial Sums”

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ABSTRACT. The question under investigation is equiconvergence on $\mathbb{T}^N = [-\pi, \pi)^N$ of expansions in multiple trigonometric Fourier series and in Fourier integral of functions $f \in L_p(\mathbb{T}^N)$ and $g \in L_p(\mathbb{R}^N)$, $p > 1$, $N \geq 2$, $g(x) = f(x)$ on $\mathbb{T}^N$. We consider the case when the rectangular “partial sums” of these expansions, i.e. $S_n(x; f)$ and $J_\alpha(x; g)$ correspondingly, have “indexes” $n = (n_1, \ldots, n_N) \in \mathbb{Z}^N$ and $\alpha = (\alpha_1, \ldots, \alpha_N) \in \mathbb{R}^N$ with components n_j and α_j satisfying relation: $|\alpha_j - n_j| \leq C$, $j = 1, \ldots, N$, constant C does not depend on n and α. In particular, the case when some of components n_j are elements of lacunary sequences is considered. An “almost” Cauchy property for sequences of rectangular partial sums of multiple Fourier expansions of functions in L_p, $p > 1$ was found.