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Reviewer: George U. Brauer

Reviewer number: 003307

Address:
Math Dept.
University of Minnesota
Minneapolis, MN 55455
minette@math.umn.edu

Author: Stanojevic, Caslav V.

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Review text:

The concept of slow oscillation and moderate divergence are extended to linear topological space. If $x = \{x_n\}$ is a sequence of elements in a linear topological space B, and $S_n(x) = \sum_{k=1}^{n} x_k$ are the partial sums of the series $\sum x_k$, then for each linear functional Φ on B the sequence $\{S_n(x)\}$ is said to be Φ-slowly oscillating if $\lim|\Phi(S_N(x)) - \Phi(S_N(x))| = 0$ as M, N tend to infinity, $N > M$, N/M tends to one. If the sequence $\{S_n(x)\}$ is Φ-slowly oscillating for each functional Φ in the dual B^* of B, then the sequence $\{S_n(x)\}$ is said to be weakly-slowly oscillating. If B is normed and $\lim\|S_N(x) - S_M(x)\| = 0$ as M, N tend to infinity $N > M$, N/M tends to one, then $\{S_n(x)\}$ is said to be slowly oscillating in norm. If B is normed then the sequence $\{S_n(x)\}$ is said to be moderately divergent if $\|S_n(x)\| = o(n^{s-1})$ as n tends to infinity and $\sum_{n=0}^{\infty} \|S_n(x)\|/_n^{-s} < \infty$ for $s > 1$. It is shown that if $\{S_n(x)\}$ is weakly slowly oscillating in B, then the series $\sum \Phi(x_n)$ exp int/n is the Fourier series of a function in $L^2(0, 2\pi)$ for $r \geq 2$. if $\{S_n(x)\}$ is moderately divergent then for each functional Φ in B^* there is an absolutely convergent Fourier representing a function α_ϕ whose derivative $\alpha'_{\Phi'}$ is in L^r for $r \geq 2$; moreover the function α_ϕ satisfies the relation $\sum_{n=1}^{\infty} \Phi(x_n/n)$ exp i nt $= \alpha_\Phi(t) - i$ (1-exp). For each functional Φ in B^* the Fourier series $\sum_{n=1}^{\infty} \Phi(x_n)$ exp in t is absolutely convergent if and only if the quantities $\| \sum_{k=1}^{n} (exp\ iarg\ \Phi(x_k)) x_k \|$ are bounded.