

LEVITAN ALMOST PERIODICITY OF THE CURVILINEAR INTEGRALS

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Levitan almost periodic functions of many variables with values in the Freshet space Y are considered. For the such functions the theorem similar to the Bohl-Bohr theorem [1] is proved.

Definition 1. *The continuous function $f(x) : R^k \rightarrow Y$, where Y is the Freshet space is called as Levitan-almost periodic (L-a.p.) function if for any $\varepsilon > 0$ and a finite set $N \subset R^k$, the relatively dense set $E \subset R^k$ exists such that*

$$E - E \subset \{\tau \in R^k : \sup_{x \in N} \rho(f(\tau + x), f(x)) < \varepsilon\}.$$

Definition 2. *The set $E \subset R^k$ is called relatively dense if a finite number of elements $a_{i=1}^n, a_i \in R^k$ exists such that*

$$R^k = \bigcup_{i=1}^n (a_i + E).$$

Theorem. *Let the Freshet space Y does not contain a subspace that is isomorphic to the space c_0 , and the integrands $P_i(x) : R^k \rightarrow Y, i = 1, 2, \dots, k$ are L-a.p. functions. Then, if the curvilinear integral $\Phi(x) = \int_0^\tau \sum_{i=1}^k p_i(x) dx_i, \tau \in R^k$ is independent from the integration path and is limited on the relatively dense set $E \in R^k$, it is L-a.p. function.*

REFERENCES

- [1] B.M. Levitan, Almost periodic functions, Gosizdat, Moskwa, 1953 (in Russian).
- [2] M.G. Lubarski, *On an indefinite integral of Levitan almost periodic function*, Theory Func., Func. Anal. and their Appl. **16** (1972), 139–150.

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