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12. Probability and Statistics

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Martchenko, B., Institute of Electrodynamics of the Ukrainian national Academy of Sciences, Kiev-57, Ukraine

Concerning on a theorem for periodic in Slutskiy sense linear random processes

In the report the linear random process that may be represented by stochastic integral

$$\xi(t) = \int_{-\infty}^{\infty} \varphi(\tau, t) d\eta(\tau),$$

where $\varphi(\tau, t) \in L_2(-\infty, \infty)$ is a non-stochastic kernel on for every fixed $t \in (-\infty, \infty), \eta(\tau), \tau \in (-\infty, \infty)$ is a stochastically continuous generating process with independent increments is discussed. The main theorem that determines the necessary and sufficient conditions imposed on the kernel and the generating process in order that $\xi(t)$ be T-periodic process in Slutskiy sense is formulated. Applications aspects and practical significance of the theorem are discussed