

ON RECURRENT DIFFERENTIAL REPRESENTATIONS FOR
STATIONARY STOCHASTIC PROCESSES

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Abstract: In this paper differential representations for stationary stochastic processes with quotients of analytic functions of minimal type as spectral characteristics are given. Such a process is a limit (in the mean square sense) of stationary stochastic processes $y_n(t)$ ($n = 1, 2, \dots$) which are solutions of an infinite-dimensional system of stochastic differential equations. There are some recurrent connections between $y_n(t)$ and for that reason we call the differential representations considered in this paper recurrent. The representations are applied to find a necessary and sufficient condition for absolute Continuity of measures generated by Gaussian stationary processes with spectral characteristics mentioned above. This condition takes the form

$$\lim_{\lambda \rightarrow \infty} \frac{g_y(\lambda)}{g_x(\lambda)} = 1.$$

Thereby the Feldman theorem is generalized.

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