

# Stochastic Resonance Application in Radioengineering

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## **Abstract**

The problem of a signal standing out from an additive mixture of a signal and white Gaussian noise is considered. The analysis is based on the phenomenon of stochastic resonance. Some characteristics of the information signal (gain, signal-to-noise ratio, etc.) at the output of the stochastic resonance system are significantly improved at a certain optimal noise level. The output signal is determined by the Runge-Kutta method and by Volterra series. The Volterra transfer functions are obtained without the initial definition of kernels. The comparative analysis has shown that the dependences of the output signal power spectrum densities obtained the numerical calculation and Volterra series usage, are of the same character. Analysis of radiosignals standing out with the help of stochastic resonance effect is given. Linear frequency modulated and phase-code-manipulated signals are considered. The possibility of the radiosignals amplifying and noise reducing is shown.