

In the Thesis the problem of estimating an unknown parameter in a stochastic differential equation is studied. Linear equations with Volterra process as the source of noise are considered. Firstly, the properties of Volterra processes and the properties of stochastic integral with respect to a Volterra process are presented. Secondly, the properties of the solution to the equation under consideration are discussed. This includes the existence of the strictly stationary solution, the properties of such solution and ergodic results. These results are then generalized to equations with a mixed noise. Ergodic results are used to derive strongly consistent estimators of the unknown parameter.