

1 Asymptotic Behavior of Solutions of Stochastic Equations and Applications in Statistical Parameter Estimation

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In different models that appear in numerical mathematics , stochastic optimization problems , statistical parameter estimation we come to the necessity to study the behavior of solutions of stochastic equations. Let us consider the following example . Example : suppose that we would like to find a solution of a deterministic equation where f is some continuous function, and D is some bounded region. But according to the real scheme of calculations we measure the function with random errors in the form : where ϵ_i are jointly independent families of random function (fields) such that $\epsilon_i \rightarrow 0$. In this case it is reasonable to approximate the function by the averaging Therefore a natural question appears : in what sense and under which condition a solution of a stochastic equation approximates a solution of the first equation as $n \rightarrow \infty$.