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Analysis of Stochastic Recurrent Algorithms with the Random Reaction Time and Applications for Some Queueing Models

The recurrent algorithms class, which take into account reaction times on each step are often arisen at the research into the problems connected with many queueing models. Random processes describing models, which have such a property that the character of their development spontaneously varies at some moments of time that can be random functionals of the previous trajectory, were considered in (V. V. Anisimov [*Random Processes with Discrete Component*, Kiev, 1988]) and were called "switching" processes (SP).

We consider theorems of an average principle and a diffusion approximation types for SP in the case of an additional dependence on a current time and their applications in queueing systems as well.