On the behavior of a stochastic finite automaton
in a stationary random medium

Tariel Khvedelidze
e-mail: tariel.khvedelidze@tsu.ge

Department of Computer Sciences
Iv. Javakhishvili Tbilisi State University
13 University St., 0186 Tbilisi, Georgia

Abstract.   Finite automata are the suitable object for the construction of mathematical models of complex systems. In such systems, as the elementary objects are used finite automata, as deterministic, so and probabilistic structure.

Is proposed the construct (algorithm behavior) of a special class of a finite stochastic automaton and is regarded its functioning in a stationary random medium with three classes of reactions (win, loss, indifference). We investigate the spectral matrices Properties of Markov chains generated by the functioning of the stochastic finite automaton in a stationary random medium, knowledge of which is   essential to analyze the possible asymptotic behavior of automata in a random medium. Also investigated the Problem of convergence sequences of finite stochastic automata, and is given full classification of its possible the asymptotical behavior in stationary random medium with three classes of reactions.