# BRANCHING PROCESSES IN RANDOM ENVIRONMENT AND THE BOTTLENECKS IN EVOLUTION OF POPULATIONS

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First models of branching processes were investigated in the 80th of 19th century by two British scientists – Galton and Watson in connection with the study of extinction of nobel families. Now, owing to the efforts of Kolmogorov, Sevastuanov, Bellman, Harris, Athreya, Ney, Dawson, Dynkin and many others the theory of branching processes becomes one of the important parts of probability theory . Many results of this theory occur to be useful in various fields of science from physics and chemistry to biology. However, the classical models of branching processes do not reflect phenomena essential to the evolution of populations one of the most important of which is oscillation of the number of individuals (and not permanent exponential growth or rapid extinction as is usual in the classical models).

In our talk we consider a model of branching processes in random environment where oscillation of the size of populations is an essential feature. In particular, we formulate mathematical results which show (at least in the framework of the model under consideration and at the theoretical level) that the evolution of a population consists of favorable and unfavorable stages. Unfavorable periods reduce the size of the population to a finite (bounded) number of individuals. These periods are followed by favorable time-intervals when the population "recovers' and rapidly reestablishes its size. In real populations such phenomena is called the bottleneck of evolution of populations.