

A. A. Kudryavtsev¹⁾, A. I. Titova (Moscow, Lomonosov Moscow State University). **Degenerate-Weibull distribution of parameters in Bayesian queueing and reliability models.**

The results obtained in the studies of queueing systems and networks proved to be of a significant profundity and importance from mathematical and practical points of view. In fact queueing systems and networks are able to model a broad class of real systems, primarily info-telecommunication systems and networks. In order to reflect real processes in a more adequate way current development of queueing theory is being carried out mostly with a focus on studying more complex service disciplines, input flows and service time distributions with more and more complicated probabilistic characteristics. Among the different alternative approaches to scientific researches in the queueing theory one may highlight the Bayesian approach which implies randomization of classical system parameters, for instance, the queueing system of $M|M|1|0$ type. This randomization allows us to draw analytical conclusions about large groups of the systems where those systems are of the same type or about the systems with alternating characteristics the changes in which happen at unpredictable for a researcher moments of time.

In the framework of Bayesian approach, the key parameters of the queueing system $M|M|1|0$, which are the input flow intensity λ and the service intensity μ , are supposed to be random. Thus, other system parameters are also randomized. It is convenient to consider probability characteristics of system loading factor $\rho = \lambda/\mu$. As it is generally known, the availability of steady-state mode of the system under consideration depends on the value ρ which appears in many formulas that describe characteristics of different queueing systems. Hence, the study of the value ρ should be considered within the frames of Bayesian theory of queueing systems.

The report contains formulas for the probability characteristics of the loading factor and of the probability that a claim received by the system will not be lost in the queueing system of $M|M|1|0$ type, where one of the system parameters λ and μ has a degenerate distribution and the other has a Weibull distribution. Also numerical results for model examples are provided.