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LARGE DEVIATIONS PROBABILITIES FOR GENERALIZED RENEWAL PROCESSES WITH REGULARLY VARYING JUMP DISTRIBUTIONS

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In the paper, we study the asymptotic behavior of the probabilities of crossing arbitrary "remote" curvilinear boundaries in the range of large deviations by generalized renewal processes with linear drift. We assume that the jump distributions vary regularly on the positive half-line. In a number of cases, we also assume that the tails of the distributions have regularly varying majorants on the negative half-axis. We impose weaker conditions on the distributions of the renewal intervals. The regular variation condition needs to be used only in the case when boundary crossing can occur due to a very long renewal interval. The results of the paper are obtained for the widest possible deviations zones. For one-dimensional distributions of the processes, more advanced results are obtained, including second order asymptotic expansions.

Key words and phrases: generalized renewal process, large deviations probabilities, regularly varying jump distributions, curvilinear boundary crossing probability, asymptotic expansions.

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