Transient analysis of one-sided Lévy-driven queues

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Abstract

In this paper we analyze the transient behavior of the workload process in a Lévy input queue. We are interested in the value of the workload process at a random epoch; this epoch is distributed as the sum of independent exponential random variables. We consider both cases of spectrally one-sided Lévy input processes, for which we succeed in deriving explicit results. As an application we approximate the mean and the Laplace transform of the workload process after a deterministic time.

Keywords: Queueing ◦ Lévy processes ◦ fluctuation theory ◦ spectrally one-sided input ◦ transient analysis

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