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Finite-source retrial queues with applications*

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Abstract

We consider a single server retrial queueing system with a finite number of homogeneous sources generating requests after a random time. The service of an arriving customer finding the server idle starts immediately; otherwise the request enters into an orbit from where the calls are repeated after a random time. Upon completion of a service, with a certain probability the server searches for an orbiting customer. Assuming the search time to be negligible, source, service, and retrial times to be independent and exponentially random variables we are interested in the main steady-state performance measures.

The novelty of the investigation is the introduction of orbital search by the server. The MOSEL-2 tool is used to formulate and solve the problem resulting various illustrative numerical examples showing the effect of the search probability on the mean response time of the requests and utilisation of the server. The talk deals with several applications of the model, too.

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