On a queueing model with service interruptions

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Abstract

Single-server queues in which the server takes vacations arise naturally as models for a wide range of computer-, communication- and production systems. In almost all studies on vacation models, the vacation lengths are assumed to be independent of the arrival, service, workload and queue length processes. In the present study we allow the length of a vacation to depend on the length of the previous active period, viz., the period since the previous vacation. Under rather general assumptions regarding the offered work during active periods and vacations, we determine the steady-state workload distribution. We conclude by discussing several special cases including polling models, and relate our findings to results obtained earlier.

Keywords: Lévy process, storage process, busy and idle periods, queues with server vacations

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