A Batch Arrival Queue with Second Optional Service and Reneging During Vacation Periods

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Abstract:
We study a two-phase queuing system model where arrivals come to the system in batches of variable size following a compound Poisson process. We consider that service is provided in two phases, the first service is essential and second service is optional. Service becomes unavailable when the server goes for vacation and customers may decide to renege. We treat reneging in this paper when service is unavailable as the server is on vacation. We obtain steady state results in terms of probability generating function. Some special cases are discussed and a numerical illustration is provided.