QUEUEING MODELS WITH MATRIX-EXPONENTIAL DISTRIBUTIONS AND RATIONAL ARRIVAL PROCESSES

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Traditional proofs of the matrix geometric solutions for queues of the GI/M/1 type use probabilistic arguments related to the sample paths of Markov chains. Such an approach is not directly applicable when the components with which we are modelling consist of matrix-exponential distributions and rational arrival processes. We have previously presented a method based on a modification of a last entrance argument introduced by Ramaswami. In this talk we will focus on an approach based on results for Markov chains on general state spaces when considering state changes in the embedded Markov chain of the queue.