A two-station queue with dependent preparation and service times

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Abstract: We discuss a single-server multi-station alternating queue where the preparation times and the service times are auto- and cross-correlated. We examine two cases. In the first case, preparation and service times depend on a common discrete time Markov chain. In the second case, we assume that the service times depend on the previous preparation time through their joint Laplace transform. The waiting time process is directly analysed by solving a Lindley-type equation via transform methods. Numerical examples are included to demonstrate the effect of the autocorrelation of and the cross-correlation between the preparation and service times.

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