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Dynamic Control of a Service Center with Abandonments

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ABSTRACT

In this talk we study the dynamic control of a single server that must meet the service requirements of two parallel queues. Customers arrive to each queue according to independent Poisson processes. Each customer either waits until the service is completed, or their (independent and exponential) patience runs out. The service requirements of customers are exponential and the service rate of the server is fixed and known.

Two cost/reward models are considered. In the first, customers are differentiated by their holding cost rate and the penalty charged for customer abandonment. In the second model, a reward is received for each customer class. The challenges include the fact none of the traditional methods (interchange arguments, uniformization) easily extend. This talk will explain these challenges, how they are addressed and where the optimal policy defies intuition.