Abstract:

We study four models of a three server queueing system with Bernoulli schedule optional server vacations. Customers arriving at the system one by one in a Poisson process are provided identical exponential service by three parallel servers according to a first-come, first-served queue discipline. In model A, all three servers may be allowed a vacation at one time and in Model B, at the most two of the three servers may be allowed a vacation at one time, in model C at the most one server is allowed a vacation and in model D no server is allowed a vacation. We study steady state behavior of the four models and obtain steady state probability generating functions for the queue size at a random point of time for all states of the system. In model D, a known result for a three server queueing system without server vacations is derived.