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Charles Knessl* (knessl@uic.edu), Dept. Of Math., Stat. and Comp. Sci., 851 South Morgan Street, Chicago, IL 60607, and **Haishen Yao**. *On the Shortest Queue Version of the Erlang Loss Model*.

We consider two parallel $M/M/N/N$ queues. Thus there are N servers in each queue and no waiting line(s). The network is fed by a single Poisson arrival stream of rate λ , and the $2N$ servers are identical exponential servers working at rate μ . A new arrival is routed to the queue with the smaller number of occupied servers. If both have the same occupancy then the arrival is routed randomly, with the probability of joining either queue being $1/2$. This model may be viewed as the shortest queue version of the classic Erlang loss model. If all $2N$ servers are occupied further arrivals are turned away and lost.

We let $\rho = \lambda/\mu$ and $a = N/\rho = N\mu/\lambda$. We study this model both numerically and asymptotically. For the latter we consider heavily loaded systems ($\rho \rightarrow \infty$) with a comparably large number of servers ($N \rightarrow \infty$ with $a = O(1)$). We shall obtain asymptotic approximations to the joint steady state distribution of finding m servers occupied in the first queue and n in the second. The asymptotic approximations are shown to be quite accurate numerically. (Received September 14, 2007)