

具有中途准入机制和多重休假的离散时间 $GI/Geom^{(a,b)}/1/N$ 早到排队系统余妙^{1,2}, 唐应辉³, 付永红⁴

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 $GI/Geom^{(a,b)}/1/N$ Early Arrival Queueing System with Accessible Mechanism of Ongoing Service and Multiple VacationsYU Miaomiao^{1,2}, TANG Yinghui³, FU Yonghong⁴

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摘要 运用补充变量方法和嵌入Markov链方法讨论了一个具有批量服务中途准入机制的离散时间多重休假排队系统. 利用一种有效的数值迭代算法获得了系统中三种时刻的队长分布. 进一步, 使用不同时刻的队长分布, 通过数值化方法研究了系统参数对阻塞概率, 批量服务中途准入概率, 顾客在缓冲空间中平均等待时间等几类重要性能指标的影响.

关键词: 离散时间排队 批量服务中途准入机制 补充变量方法 嵌入Markov链

Abstract: Applying the supplementary variable technique and embedded Markov chain, a discrete-time multiple vacations queueing system with accessible mechanism of ongoing bulk service is considered. Through an effective iterated algorithm, we obtain the queue length distributions at three kinds of time epochs. Furthermore, using the queue length distribution at different time epochs and the numerical method, we study the influence of system parameters on several performance measures such as loss probability, accessible probability of ongoing bulk service and the mean waiting time of customers in the buffer space.

Key words: discrete-time queue accessible mechanism of ongoing bulk service supplementary variable technique embedded Markov chain

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- [2] Chaudhry M L, Templeton J G C. A First Course in Bulk Queues. New York: Wiley, 1983
- [3] Vijaya Laxmi P, Gupta U C. On the Finite-buffer Bulk-service Queue with General Independent Arrivals: GI/M[b]/1/N. Operations Research Letters, 1999, 25(5): 241-245 
- [4] Sivasamy R. A Bulk Service Queue with Accessible and Non-accessible Batches. Opsearch, 1990, 27(1): 46-54
- [5] Samanta S K, Chaudhry M L, Gupta U C. Discrete-time $\text{Geo}^X/G^{(a,b)}/1/N$ Queues with Single and Multiple Vacations. Mathematical and Computer Modelling, 2007(1-2), 45: 93-108
- [6] Gupta U C, Sikdar K. The Finite-buffer M/G/1 Queue with General Bulk-service Rule and Single Vacation. Performance Evaluation, 2004, 57(2): 199-219 
- [7] Arumuganathan R, Rathinasamy A. Analysis of a Bulk Queue with Multiple Vacations and Accessible Batch Service. Proceedings of the Second National Conference on Mathematical and Computational Models, 2003: 79-88
- [8] Vijaya Laxmi P, Goswami V, Yesuf O M. Finite Buffer Single Vacation Queue with Accessible and Non-accessible Batch Service. International Journal of Information and Management Sciences, 2010, 21(2): 125-142
- [9] Goswami V, Mohanty J R, Samanta S K. Discrete-time Bulk-service Queues with Accessible and Non-accessible Batches. Applied Mathematics and Computation, 2006, 182(1): 898-906 
- [10] Hunter J J. Mathematical Techniques of Applied Probability (Vol.2): Discrete Time Models: Techniques and Applications. New York: Academic Press, 1983
- [11] Gupta U C, Goswami V. Performance Analysis of Finite Buffer Discrete-time Queue with Bulk Service. Computers and Operations Research, 2002, 29(10): 1331-1341 
- [12] Samanta S K, Gupta U C, Sharma R K. Analysis of Finite Capacity Discrete-time GI/Geo/1 Queueing System with Multiple Vacations. Journal of the Operational Research Society, 2007, 58(3): 368-377 
- [13] Chaudhry M L, Gupta U C. Performance Analysis of the Discrete-time GI/Geom/1/N Queue. Journal of Applied Probability, 1996, 33(1): 239-255 
- [14] Tian N S, Zhang Z G. The Discrete-time GI/Geo/1 Queue with Multiple Vacations. Queueing System, 2002, 40(3): 283-294 

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