

工件按加工长度不增序到达的最小化最大流程在线分批排序

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Online parallel batching scheduling for nonincreasing-processing-time jobs to minimize the maximum flow-time

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摘要 研究单处理机工件按加工长度不增顺序到达的在线分批排序问题. 工件按时在线到达, 目标是 minimized 最大流程. 流程时间是指工件的完工时间与到达时间的差值, 它体现了工件在系统内的逗留时间. 对于批容量有界的情形, 给出了一个竞争比为 $\frac{1+\sqrt{5}}{2}$ 的最好可能的在线算法; 对于批容量无界的情形, 给出了一个竞争比为 $\sqrt{2}$ 的最好可能的在线算法.

关键词: [在线排序](#) [平行分批](#) [最大流程时间](#) [竞争比](#)

Abstract: We consider on-line scheduling on a parallel batching machine where the jobs come with the nonincreasing-processing times. In this paper online means that jobs arrive over time. The objective is to minimize the maximum flow time of these jobs. The flow-time of a job means that its completion time minus its arrival time. It reflects the time of the job staying in the system. For the bounded model, we give a best possible algorithm with competitive ratio $\frac{1+\sqrt{5}}{2}$. For the unbounded model, we also give a best possible algorithm with competitive ratio $\sqrt{2}$.

Keywords: [on-line scheduling](#), [parallel batching](#), [maximum flow-time](#), [competitive ratio](#)

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[1] Lee C Y, Uzsoy R. Minimizing makespan on a single batch processing machine with dynamic job arrivals [J]. International Journal of Production Research, 1999, 37: 219-236. 

[2] Poon C K, Zhang P X. Minimizing makespan in batch machine scheduling [J]. Algorithmica, 2004, 39: 155-174. 

[3] Brucker P, Hoogeveen H, Kovalyov M Y, et al. Scheduling a batching machine [J]. Journal of Scheduling, 1998, 1: 31-54. 3.0.CO;2-R target="_blank"> 




[4] Deng X, Poon C K, Zhang Y. Approximation algorithms in batch processing [J]. Journal of Combinatorial Optimization, 2003, 7: 247-257. 

[5] Zhang G C, Cai X Q, Wong C K. On-line algorithms for minimizing makespan on batch processing machines [J]. Naval Research Logistics, 2004, 48: 241-258. 

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- [6] Poon C K, Yu W C. A flexible on-line scheduling algorithm for batch machine with infinite capacity [J]. Annals of Operations Research, 2001, 133: 175-181. 
- [7] Poon C K, Yu W C. On-line scheduling algorithms for a batch machine with finite capacity [J]. Journal of Combinatorial Optimization, 2005, 167-186. 
- [8] Li W H, Yuan J J. Online scheduling on unbounded parallel-batch machines to minimize maximum flow-time [J]. Information Processing Letters, 2011, 111: 907-911. 
- [1] 姚然, 陈光亭, 张安, 陈永. 具有等级约束的三台机排序问题的可中断在线算法[J]. 运筹学学报, 2013, 17(4): 63-68
- [2] 杨素芳, 李文华. 具有前瞻区间的两个工件组单机在线排序问题[J]. 运筹学学报, 2012, 16(2): 115-120
- [3] 杨名, 鲁习文. 有使用限制的二台机器流水作业问题[J]. 运筹学学报, 2011, 15(3): 62-69
- [4] 王成飞, 张玉忠, 柏庆国. 具有线性恶化效应的在线分批排序问题[J]. 运筹学学报, 2011, 15(3): 107-114