

## 有元素类型约束的k-划分问题研究

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## k-partitioning problem with items' type restriction

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**摘要** 研究有元素类型约束且每个元素权重为正数的k-集合划分问题, 元素类型约束指k-划分后每个集合所包含的元素的类型均不同. 该问题是对k-划分问题(k-partitioning problem)的一个拓展, 在一人可拥有多技能执照的行业有广泛的应用背景. 提出基于LPT算法思想的贪婪算法, 并得出以下结论:  $k \leq 2$ , 该算法给出最优解;  $k > 2$ , 最坏情况下的性能比为  $2 \cdot m^{-1}$ , 这里m指待分配集合的数量.

**关键词:** [k-划分问题](#), [元素类型约束](#), [LPT](#), [最坏情况性能比](#)

**Abstract:** We consider a k-partitioning problem with items' type restriction. Items' type restriction means each set containing k distinct types' items. This problem is in fact an extended k-partitioning problem, and has a wide application in the industry where one person can hold multi-skill licenses. For solving it we propose a greedy algorithm and obtain the following conclusions:  $k \leq 2$ , greedy algorithm get an optimal solution;  $k > 2$ , the performance ratio is  $2 \cdot m^{-1}$ .

**Keywords:** [k-partitioning problem](#), [items' type restriction](#), [LPT](#), [worst-case performance ratio](#)

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