



## Approximation Algorithm and Incentive Ratio of the Selling with Preference

报告人：张涌

所属单位：中国科学院深圳先进技术研究院

报告时间：2019年11月5日 10:15-10:45

报告地点：中德应用优化研究所会议室（合肥学院南艳湖校区 53 栋 920）

**摘要：** We consider the market mechanism to sell two types of products,  $A$  and  $B$ , to a set of buyers  $I = \{1, 2, \dots, n\}$ . The amounts of products are  $m_A$  and  $m_B$  respectively. Each buyer  $i$  has his information including the budget, the preference and the utility function. On collecting the information from all buyers, the market maker determines the price of each product and allocates some amount of product to each buyer. The objective of the market maker is design a mechanism to achieve the semi market equilibrium. In this paper, we show that maximizing the total utility of the buyers in satisfying the semi market equilibrium is NP-hard and give a 1.5-approximation algorithm for this optimization problem. Moreover, in the market, a buyer may get more utility by misreporting his information. We consider the situation that a buyer may misreport his preference and prove that the incentive ratio, the percentage of the improvement by misreporting the information, is upper bounded by 1.618.

**简介：** 张涌，中国科学院深圳先进技术研究院研究员。2007年，博士毕业于复旦大学计算机系。之后在德国柏林工业大学数学系做博士后，香港大学计算机系任职高级研究员。张涌博士的研究方向包括算法优化、分布式计算等，近年来在本领域中国际知名会议和期刊上发表文章超过 90 篇。张涌博士近年来承担了多项国家和省部级科研项目，包括国家自然科学基金，科技部国家重点研发计划，中科院重点部署项目等。