中国科学院数学与系统科学研究院
Academy of Mathematics and Systems Science, CAS

运筹学与信息科学研究室

Department of Operations Research and Information Science

学术报告

题　　目： **Fairness Criteria for Allocating Indivisible Chores: Connections and Efficiencies**

报告人： **陈礴 教授，华威大学**

时　　间： **3 月 24 日（星期五） 14:30 – 15:30**

地　　点： **数学院南楼 N226**

摘　　要： We study several fairness notions in allocating indivisible chores (i.e., items with non-positive utilities) to agents, who have additive and submodular cost functions. The fairness criteria we are concerned with are envy-free up to any item (EFX), envy-free up to one item (EF1), maximin share (MMS), and pairwise maximin share (PMMS), which are proposed as relaxations of envy-freeness in the setting of additive cost functions. For allocations under each fairness criterion, we establish their approximation guarantee for other fairness criteria. Under the additive setting, our results show strong connections between these fairness criteria and, at the same time, reveal intrinsic differences between allocations of goods (i.e., items with positive utilities) and chores. However, such strong relationships cannot be inherited by the submodular setting, under which PMMS and MMS are no longer relaxations of envy-freeness and even worse, few non-trivial guarantees exist. We also investigate efficiency loss under these fairness constraints and establish their prices of fairness.

报告人简介： 陈礴：英国社会科学院院士，运筹学会 (ORS) 会士，数学及其应用学会 (IMA) 会士。英国华威大学教授，兼复旦大学讲座教授。自 2006 年起为诺贝尔经济学奖提名专家。曾获 1997 年英国经济与社会研究基金会 Seninor Fellowship，2007 年英国工程与物理科学研究基金会科学与创新奖。他的主要研究方向包括组合最优化、调度与运输、博弈论与机制设计。