中国科学院数学与系统科学研究院

应用数学研究所

华罗庚应用数学青年论坛

报告题目： Pandora Box Problem with Nonobligatory Inspection: Hardness and Approximation Scheme

报 告 人： 伏虎 副教授

上海财经大学 理论计算机科学研究中心

时　　间： **2023 年 3 月 27 日 (星期一) 上午 10:30--12:00**

地　　点： **腾讯会议 803-304-619**

摘　　要： Weitzman (1979) introduced the Pandora Box problem as a model for sequential search with inspection costs, and gave an elegant index-based policy that attains provably optimal expected payoff. In various scenarios, the searching agent may select an option without making a costly inspection. The variant of the Pandora box problem with non-obligatory inspection has attracted interest from both economics and algorithms researchers. Various simple algorithms have proved suboptimal, with the best known 0.8-approximation algorithm due to Guha et al. (2008). No hardness result for the problem was known. In this work, we show that it is NP-hard to compute an optimal policy for Pandora's problem with nonobligatory inspection. We also give a polynomial-time approximation scheme (PTAS) that computes policies with an expected payoff at least $(1-\epsilon)$-fraction of the optimal, for arbitrarily small $\epsilon>0$. On the side, we show the decision version of the problem to be in NP. This is joint work with Jiawei Li and Daogao Liu.

个人简介： 伏虎现为上海财经大学理论计算机科学研究中心副教授。博士毕业于康奈尔大学，博士后先后工作于微软研究院新英格兰实验室和加州理工学院，并曾于加拿大英属哥伦比亚大学计算机系(UBC)执教。研究兴趣主要为算法及其在经济问题中的应用。论文发表于 Operations Research, Mathematics of Operations Research, Journal of Economic Theory, Games and Economic Behavior 和 STOC, FOCS, EC, SODA 等期刊和会议上。