

数学与系统科学研究院

计算数学所学术报告

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报告题目:

**Reformulations and Solution
Algorithms for the Maximum Leaf
Spanning Tree Problem**

邀请人: 袁亚湘研究员

报告时间: 2009年7月30日(周四)

下午 3:30—5:00

报告地点: 科技综合楼三层 311

计算数学所报告厅

Abstract:

Given a graph $G = (V;E)$, the Maximum Leaf Spanning Tree Problem is to find a spanning tree of G with as many leaves as possible. The problem is easy to solve when G is complete. However, for the general case, when the graph is sparse, it is proven to be NP-hard. In this presentation, two reformulations are proposed for the problem. The first is a reinforced directed graph version of a formulation found in the literature. The second recasts the problem as a Steiner Arborescence Problem over an associated directed graph. Branch-and-cut algorithms have been implemented for these two reformulations. Additionally, an improved version of a MLSTP Branch-and-Cut algorithm suggested in the literature has also been implemented. All of these algorithms benefit from pre-processing tests and a heuristic, to be

discussed in the presentation.

Computational comparisons between these three algorithms indicate that the one associated with the first reformulation is the overall best. It is capable of solving to proven optimality MLSTP instances that are much larger than those previously attempted in the literature.

欢迎大家参加！