数学与系统科学研究院

计算数学所学术报告

报告人： **Dr. Ya-Feng Liu**

（ *LSEC, Institute of Computational Mathematics and Scientific/Engineering Computing, Academy of Mathematics and Systems Science Chinese, Academy of Sciences* ）

报告题目：
Joint Power and Admission Control

报告时间：2014 年 2 月 10 日（周一）
下午 13:30~14:30

报告地点： 科技综合楼三层 311
计算数学所报告厅

Abstract：

In the first part of this talk, we shall consider the joint power and admission control problem for a wireless network consisting of multiple interfering links where the channel state information (CSI) is assumed to be perfectly known. The goal is to support a maximum number of links at their specified signal to interference plus noise ratio (SINR) targets while using a minimum total transmission power. We first reformulate this NP-hard problem as a sparse ℓ_0-minimization problem and then approximate it by a linear program. Furthermore, we derive two easy-to-check necessary conditions for all links in the network to be simultaneously supported at their target SINR levels, and use them to iteratively remove strong interfering links (deflation). Numerical simulations show that the proposed approach compares favorably with the existing approaches in terms of the number of supported links, the total transmission power, and the execution time. In the second part of this talk, we shall discuss some interesting extensions of the first part. For instance, instead of doing linear programming approximation, we can do non-convex approximations to improve the approximation performance. Also, we shall discuss how to extend the algorithm developed in the first part to the imperfect CSI scenario, which is particularly appealing from the network operator's perspective.
This talk is based on the following joint works.

[1] Ya-Feng Liu, Yu-Hong Dai, and Zhi-Quan Luo, "Joint power and admission control via linear programming deflation," *IEEE Trans. Signal Process.*, vol. 61, no. 6, pp. 1327—1338, Mar. 2013.

[2] Ya-Feng Liu, Yu-Hong Dai, and Shiqian Ma, "Joint power and admission control: Non-convex approximation and an efficient polynomial time deflation approach," submitted to *IEEE Trans. Signal Process.*

[3] Ya-Feng Liu, Enbin Song, and Mingyi Hong, "Sample approximation-based deflation approaches for chance SINR constrained joint power and admission control," submitted to *IEEE Trans. Signal Process.*

欢迎大家参加！