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：

On Cardinality Constrained Optimization: Some Models and Algorithms

邀请人：　戴彧虹 研究员

报告时间：**2014** 年 **7** 月 **24** 日（周四）

上午 **10:30-11:30**

报告地点：　数学院南楼七层 **702** 会议室

Abstract:

Cardinality constrained optimization has attracted a great deal of attentions in machine learning and financial engineering, which is generally believed to be NP-hard. In this talk, we mainly consider three cardinality constrained optimization models in index replicating, and present corresponding efficient algorithms. Firstly, we introduce a cardinality constrained index tracking model and propose the nonmonotone projected gradient (NPG) algorithm. The accumulation point of the sequence generated by the NPG algorithm is shown to be a local minimizer under some suitable conditions. Secondly, considering the uncertainty of return in reality, we build a robust cardinality constrained index tracking model, which is proved to be a second order conic programming (SOCP) with cardinality constraints. We design a hybrid algorithm by solving a sequence of SOCP problems under the frame of evolutionary algorithm. Moreover, we establish a distributed robust enhanced index tracking model by adding the chance constraint. According to the distribution information, we also transform it into an SOCP with cardinality constraints. Finally, some numerical experiments with factual financial data are conducted to test the effectiveness of model and the corresponding algorithms.

欢迎大家参加！