

# 数学与系统科学研究院

## 计算数学所学术报告

报告人: **Prof. Deren Han**

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报告题目:

**The Kurdyka-Lojasiewicz  
Inequality and Its Applications in  
Solving Nonconvex Separable  
Optimization Problems**

邀请人: **戴彧虹 研究员**

报告时间: **2015 年 1 月 14 日 (周三)**

**上午 10:15-11:15**

报告地点: **数学院南楼二层 210**

**会议室**

## **Abstract:**

The minimization problems where the objective function is the sum of some separable functions and the constraint is linear receive more and more attentions in recent years, and many efficient numerical algorithms were proposed. While there are a lot of convergence analysis for the convex case, the convergence of these algorithms for the nonconvex case is still open and the research for this case is in its infancy. Most recently, there is some progress, and the Kurdyka-Lojasiewicz inequality plays a key role. In this talk, we give a review on the Kurdyka-Lojasiewicz inequality and introduce its applications in the convergence analysis in various types of algorithms. Finally, we report our result on proving the classic alternating direction method of multipliers (ADMM) for the nonconvex separable optimization problems. Specially, we prove that any cluster point of the iterative sequence generated by ADMM is a solution point, provided that the penalty parameter is greater than  $2L$ , where  $L$  is the Lipschitz constant of the gradient of one of the involving function. Under some further conditions on the problem's data, we also analyze the rate of convergence of the algorithm.

**欢迎大家参加！**