

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:

**A finite-step convergent  
derivative-free method for  
unconstrained optimization**

邀请人: 周爱辉 研究员

报告时间: 2019 年 6 月 7 日 (周五)

下午 16:15-17:15

报告地点: 科技综合楼三层

311 报告厅

## **Abstract:**

Inspired by the behavior of the blind for hill-climbing using a stick to detect a higher place by drawing a circle, in this talk, we will present a new derivative-free method, i.e., the hill-climbing method with a stick (HiCS), to treat unconstrained optimization. At a given point, the new algorithm can obtain a better state by searching a surface with the length of the stick. This algorithm can capture a neighbourhood of a minimizer of the objective function rather than directly approximating it. A simple but rigorous theory can guarantee the finite-step convergence of the proposed algorithm without convexity assumption. Only one parameter is required to be input in this method which makes it easy for coding. Meanwhile, an economic sampling strategy with the regular simplex of evaluating function values is given to optimize high dimensional problems. Finally, several standard numerical examples have been used to demonstrate its efficiency. HiCS shows potential to find the global minimizer by choosing proper searching parameters.

**欢迎大家参加！**