

数学与系统科学研究院

计算数学所学术报告

报告人: 王周宏副教授

(北京交通大学)

报告题目:

**A Primal-Dual Method for Unfolding Neutron
Energy Spectrum from Multiple Activation Foils**

邀请人: 戴彧虹研究员

报告时间: 2017年11月29日(周三)

上午 9:00-10:00

报告地点: 数学院南楼七层N714

报告摘要:

**In this talk we propose a robust and efficient
numerical method for a nonlinear and ill-conditioned
inverse problem arising in the unfolding procedure**

for neutron energy spectrum from multiple activation foils, where the model is built up based on the maximum entropy principle of the thermodynamic entropy theory and Boltzmann's entropy formula. The problem is equivalent to computing the analytic center of the polyhedral set $P = \{x \in \mathbb{R}^n \mid Ax = b, x \geq 0\}$, where the matrix $A \in \mathbb{R}^{m \times n}$ is ill-conditioned and the right hand side b is inaccurate. We first derive some regularization results for the ill-posed problem and obtain an equivalent well-posed linear programming problem which is easier to tackle. Then based on the primal-dual interior point methods for linear programming, we propose a hybrid primal-dual unfolding procedure for the ill-posed problem. Finally some tests are presented to show the effectiveness and robustness of the new method.

欢迎大家参加！