

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:

**Data completion in inverse problems:  
can we get away with it?**

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报告时间: **2015 年 8 月 19 日 (周三)**

**上午 10:00~11:00**

报告地点: 科技综合楼三层

**311 报告厅**

## **Abstract:**

We consider inverse problems whose forward operator involves the solution of a partial differential equation (PDE). The PDE depends on some material property  $\{$  a distributed parameter that forms a surface over the PDE domain, and the purpose of the inverse problem is to calibrate the PDE model by estimating the distributed parameter function. This is done by requiring a given function of the field (i.e., the PDE solution) to match a set of given noisy measured data. Often in applications the data is available only at a restricted set of locations, or situations, while existence and uniqueness theory, or other considerations, demand that a fuller set (e.g., "data everywhere") be given. There may also be uncertainty in data locations. It is then tempting to "complete the data", e.g. by interpolation, before starting the inverse problem solution process. Such data completion, however, has its well-known perils as well.

This talk describes our various techniques for handling (or avoidance) of data completion in the context of practical applications that include local volatility surface calibration for commodity markets; data inversion in geophysical exploration; and plant motion tracking and calibration in computer graphics.

**欢迎大家参加！**