

数学与系统科学研究院
计算数学所网络学术报告

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报告题目:

**Low rank structure in the forward and
inverse kinetic theory**

邀请人: 明平兵 研究员

报告时间: 2021 年 6 月 3 日 (周四)

上午 10:00

报告工具: 腾讯会议 ID: (442 521 913)

会议链接:

<https://meeting.tencent.com/s/VwRRKrri0ciO>

Abstract:

Kinetic theory is a body of theory from statistical mechanics. It is useful in describing the dynamics of a large number of particles, but its high dimensional structure makes the computation infeasible. In multi-scale regimes, however, kinetic equations can be compressed: The Boltzmann equation is asymptotically equivalent to the Euler equations, and the radiative transfer equation is asymptotically equivalent to the diffusion equation. In linear algebra, this phenomenon is equivalent to a system being of low rank.

I will discuss how the low rank structure forms, and how it affects the computation. In the forward regime, inserting the low-rank structure greatly advances the computation, but in the inverse regime, the system being of low rank typically makes the problems significantly harder. Joint work with Ke Chen, Shi Chen, Ru-Yu Lai, Jianfeng Lu, Gunther Uhlmann, and Stephen Wright.

欢迎大家参加！