数学与系统科学研究院

计算数学所定期学术报告

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报告题目：

Introduction to tensor models for liquid crystals

报告时间：**2021 年 5 月 27 日（周四）**

下午 16:00-17:00

报告地点：数学院南楼

204 教室

Abstract：

In this talk, we introduce some essential ingredients of mathematical theory of liquid crystals. Liquid crystals are states of matter showing intermediate physical properties between solids and liquids. They are typically formed by building blocks, which we call 'molecules', with rigidity. Although classically rod-like molecules are considered, molecules of other shape have proved to exhibit many more fascinating phases. The mechanism for liquid-crystalline phases to form is that rigid molecules can generate anisotropy in an infinitesimal volume, which further leads to complex macroscopic structures. In mathematical theories, order parameters need to be chosen for classification of local anisotropy, which are moment tensors of the orientational variable. Then, free energies need to be constructed for the description of phase transitions and elasticity. Based on the free energies, dynamic models can be established. The order parameters, free energies and dynamics can all be derived from the microscopic interactions, where the analysis of symmetries play a key role.

欢迎大家参加！