

Energy Stable Numerical Approximations for Hydrodynamic Liquid-Crystal Models

Jia Zhao, Utah State University

The hydrodynamic liquid crystal models have been used for studying flows of liquid crystals and liquid crystal polymers. In this talk, I will present a generic numerical technique that could develop full discrete, spatial-temporally second-order schemes, where only a linear system needs to be solved in each time step. These schemes are proved to be unconditionally energy stable so that a large time step is plausible. Then, we utilize these schemes to solve several widely-used liquid crystal models. Numerical examples will be presented to demonstrate their effectiveness. This is joint work with Qi Wang (University of South Carolina).