

SPEAKER:

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TITLE:

Poiseuille Flow of Full Ericksen-Leslie System Modeling Nematic Liquid
Crystal Flows

ABSTRACT:

We study the Cauchy problem of the Poiseuille flow of full Ericksen-Leslie model for nematic liquid crystals. The model is a coupled system of a parabolic equation for the velocity of fluid and a wave equation for the director field of liquid crystal molecules. For a particular choice of physical parameters, we construct solutions with smooth initial data and finite energy that produce singularities in finite time for both 1D and 2D. At the time of singularity, the gradient of solution blows up. We are also able to establish the existence of global weak solutions in 1D.