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THE HONG KONG UNIVERSITY OF SCIENCE & TECHNOLOGY

Department of Mathematics

SEMINAR ON PDE

Analysis on isotropic-nematic phase transition and liquid crystal droplet

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Abstract

In this talk, I will discuss the phase transition phenomena between the isotropic and nematic states within the framework of Ericksen theory of liquid crystals with variable degrees of orientations. Treating it as the singular perturbation problems within the Gamma convergence theory, we will show that the sharp interface formed between isotropic and nematic states is an area minimizing surface. Under suitable assumptions either on the strong anchoring boundary values on the boundary of a bounded domain or the volume constraint of nematic regions in the entire space, we also show that the limiting nematic liquid configuration in the nematic region is a minimizer of the corresponding Oseen-Frank energy with either homeotropic or planar anchoring on the free sharp interface pending on the relative sizes of leading Frank elasticity coefficients. This is a joint work with Fanghua Lin.

Date: 28 October 2022 (Friday)

Time: 9:00am

Zoom Meeting: https://hkust.zoom.us/j/95633078331 (Passcode: 648553)

All are Welcome!