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On minimizers of Landau-de Gennes energy for nematic liquid crystals

I will describe recent results for the variational problem arising in mathematics of nematic liquid crystals. The main goal is to understand the behavior of minimizers of the Landau-de Gennes free energy functional defined over a class of symmetric traceless order parameter tensors. The minimizers are characterized by the presence of topological defects, such as vortices and line defects, as well as interfaces that appear at the onset of the isotropic/nematic transition. The talk will be devoted to the analysis of these singularities for particular nematic configurations.