
DAN PHILLIPS, Purdue University, West Lafayette, IN, US

Smectic energies and existence theorems for liquid crystals

Smectic C liquid crystals form layered structures with a well defined layer thickness, where the layers are made up of rod like liquid crystal molecules, each of which tends to tilt from the layer normal by an angle θ . Liquid crystal configurations are described by a pair (ψ, \mathbf{n}) . The director field \mathbf{n} is a unit vector field representing the distribution of the molecules' long axes. ψ is a complex order parameter giving the layer structure. We investigate a 2nd order free energy, and prove the existence of minimizing pairs representing stable configurations.