



UNIAXIAL NEMATIC LIQUID CRYSTALS: DYNAMICS AND GREEN'S FUNCTIONS

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Abstract

Dynamics of uniaxial nematic liquid crystals with rod-shaped and disc-shaped molecules in an external field is considered. For the systems under study thermodynamics is constructed and nonlinear dynamic equations accounting for the internal spatial anisotropy and molecules shape are derived. Densities of additive integrals of motion and corresponding flow densities are introduced in terms of thermodynamic potential. Analytical structure of low-frequency asymptotics of two-time Green's functions is calculated and their characteristics in the region of small wave vectors and frequencies are studied. It is shown that unlike other condensed media with spontaneously broken symmetry low-frequency asymptotics of Green's functions of considered liquid crystals do not contain divergences of Bogolyubov type.

Keywords and phrases: uniaxial nematic liquid crystals, Hamiltonian approach, Green's functions, spontaneously broken symmetry.

