Optical Response of a Twist Indicator in Case of Two-Dimensional Elastic Deformation of a Liquid Crystal Caused by an Electric Field, Depending on the Physical and Structural Parameters of the Device

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Abstract

A unique algorithm and software for calculating two-dimensional elastic deformation of a LC in an electric field was developed. A computer simulation method was used to study two-dimensional elastic deformation of a LC in an electric field, depending on the physical and design parameters of the LC cell. The presence of various regions of LC deformation in case of two-dimensional deformation is shown, and the effect of the physical and structural parameters of the LC cell on the size of these regions is determined. It is shown that the ratio of the electrode size to the thickness of the LC layer has the greatest influence on the size of the regions of two-dimensional LC deformation. Of all the LC physical parameters it is the dielectric anisotropy of a LC material that has the greatest influence on LC two-dimensional deformation. The minimum size of a display element of a twist indicator was calculated depending on the physical and structural parameters.

Keywords: elastic deformation, liquid crystal, dielectric anisotropy.

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Access full text (in Russian)

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