

## Electroinduced domain structure in LiTaO<sub>3</sub> crystal controlled by crossed electrodes.

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In this paper, we present possibilities of creating controlled domain structures by the external electric field. The basic issue of this paper is studying of inducing domain structure in a volume of the crystal by changed external electric field and interaction shear horizontal (SH) component surface acoustic wave (SAW) with electroinduced domain structure. The main feature of this studies is ability to manage domain structure and conditions of interaction SH-SAW.

The changed electric field was formed by the crossed electrodes on the surface (Figure 1). It was investigated the main parameters and dimensions of the crossed electrodes structures for getting the domain with difference directional and polarization. We show that it is possible to find the optimal parameters for the thickness of the crystal and pitch between electrodes in a surface.

It was studied and described the main parameters of the interaction of low velocity SH wave on the surface with electroinduced domain structure in a SAW device. Figure 2 shows the idea of SAW device. The SH-SAW is transmitted by the IDT transducers and interaction on electroinduced domain structure. The parameters of interaction depend on the electrode configuration and electrodes electric potential. The electric potential of the electrodes can be changed and that allows us to control the interaction of SH-Wave on an electroinduced domain structure.

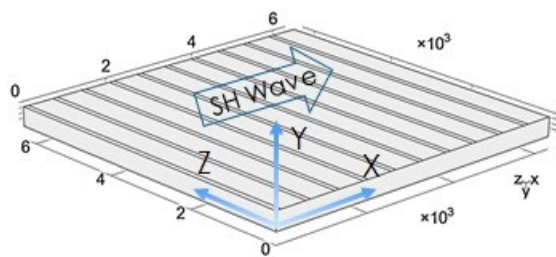


Fig. 1 - The results of the displacement field in a volume

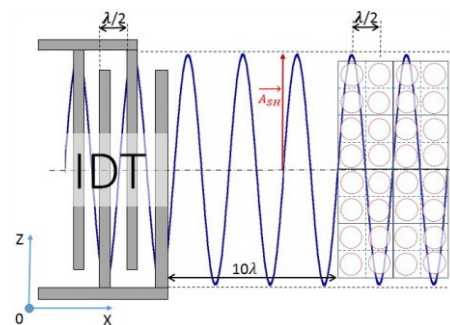


Fig. 2 - The results of the piezoelectric polarization in a crystal

We obtained the theoretical and experimental results for different types of the SAW device. Also, it was developed SAW device with optimal parameters of the electrode structure. Was studied the possibilities of the interaction SH-SAW and controlled electroinduced domain structures.

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