Fig.2 shows spatial distribution of light intensity in analyzed area. One can see changing of light beam intensity with a period of synthesized diffraction grating equal to half-period of an acoustic wave in the medium on the enlarged fragment. Geometrical size of this area is determined by beam waist and convergence angle of the laser beams, i.e. it is possible to form gratings for different modes of diffraction.

Fig.3 shows refraction index changes caused by light wave in photorefractive crystal of lithium niobate crystal.

Diffraction patterns corresponding to different interconnection patterns with different switching properties are shown in the fig.4.

Characteristic size of the region where interconnection pattern for the 0.532mcm wavelength of light is localized is equal to 100x100 mcm that is connected with diffraction limits [17].

Possibilities of modern acoustooptic modulators allow to form matrix of 512x512 patterns in photorefractive storage medium. It gives $6{,}8 \cdot 10^{10}$ cross interconnections and $6{,}8 \cdot 10^{10}$ op/s performance with 10 Gb/s bandwidth of an optical channel.

IV. Conclusion

Proposed mathematical model of interconnection pattern in acoustooptic computing devises with dynamically changed architecture can be used as a base for the synthesis of structurally complex memory blocks in optoelectronic processors and can provide level of system performance up to 10^{21} operations per second for existing elements.

Simulations of electromagnetic problem of light wave diffraction on a synthesized grating were described in this paper. It was shown that there is a possibility of reconfiguration of volume interconnections in optoelectronic data processors.

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