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# Modulation of terahertz radiation using liquid crystal π-cells

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***In this work, a new design of a liquid crystal modulator for the terahertz range was studied us-ing a computer method. The proposed design consists of a set of thin standard π-cells, each of which has its own electrical control, and the entire set is placed between the polarizer and the analyzer. If the initial terahertz radiation is linearly polarized, then there is no input polarizer in the device, which significantly increases the total transmittance of the modulator. The num-ber of standard liquid crystal π-cells is determined by the thickness of one such cell and the condition for the maximum transmittance of the interference of polarized waves. The total re-sponse time of such a modulator is determined by the speed of one standard π-cell and is sev-eral milliseconds. In this case, the transmittance coefficient for a wavelength not exceeding 30 microns of such a device can be at least 15 %. It is possible to increase the total transmit-tance of a liquid crystal modulator by optimizing the optical parameters of a standard liquid crystal cell, which will simultaneously increase the modulation range of THz radiation.***

*Keywords*: liquid crystals, modulators, terahertz radiation.

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