

Optoacoustic signal processing for image restoration based on neural networks

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The paper considers methods for processing an acoustic signal obtained with an optoacoustic effect in a liquid. A 12-layer convolutional neural network is proposed, trained by minimizing the loss of the mean square deviation. The experimentally obtained acoustic signal obtained with the optoacoustic effect has been processed. A scheme for solving the inverse problem by optoacoustic image reconstruction is considered. The results of the study show that a deep learning neural network, with the help of self-supervision based learning, can achieve higher reconstruction accuracy with shorter time frames.

Keywords: optoacoustic effect, signal processing, acoustic signal, laser.

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