

Abstract Submitted
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Statistical Analysis of Biotissues Mueller Matrix Images in Cancer Diagnostics ROMAN TSYLYAK — This work is directed to the investigation of the scope of the technique of laser polarimetry and polarization spectrometry of oncological changes of the human prostate tissue under the conditions of multiple scattering, which presents real experimental clinical situation. Statistic moments of the first (M), second (σ), third (A) and fourth (E) orders were used as the analytical tool for estimating the ensemble of random values of z , that characterize the image of biological object (intensity I, polarization azimuths α and ellipticities β) and its optical-geometrical structure (orientation directions of the protein fibrils and birefringence index of their substance Δn). It was shown that the difference between the values of average and dispersion of distributions I (0 - 0), I (0 - 90), the intensities of images of various types of prostate tissues are insufficient and are within 10%-25%. The values of the excess of intensity distribution of the images of oncologically changed prostate tissues differ from the similar parameter of a sound tissue by 1-2 times. The third statistic moment proved to be the most sensitive because it's value in the intensity distribution of polarization image I (0 - 90) of oncologically changed tissue is 21 times higher if compared with healthy tissue.

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