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**RESEARCH OF CAUSTIC SURFACE OF LASER BEAM IN FOCUS  
OF OPTICAL SYSTEM**

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***Research methodology.*** *The influence of the telescopic system on the shape of caustic surface of laser beam in focus of lens has been analyzed by the theoretical method using formulas of geometrical optics. The method of engraving of test image on black mask layer of PLL film with subsequent analysis by software and hardware system Flexometr has been used for the experimental study of caustic surface of the laser beam in the focus of optical system.*

***Results.*** *The conducted theoretical analysis suggests that the beam section diameter in the focal plane can be halved by applying the telescopic system with multiplicity N = 2. We have experimentally obtained the dependence of beam section diameter on the distance of focal plane from the material surface for the optical system with telescope and without it. These dependencies allows determining the shape of caustic surface of the laser beam in focus of optical system with and without a telescope. It has been experimentally confirmed that the use of the telescope with multiplicity N = 2 leads to a reduction in the diameter of the beam section in the focal plane on the half.*

***Novelty.*** *The research of caustic surface of laser beam in focus of lens has been has been carried out by engraving test image on PLL film using CtP device.*

***Practical significance.*** *The results may be used to increase the resolution of the CtP device.*