

# COMPARATIVE ANALYSIS OF CHARACTERISTICS OF THE DETECTORS IMAGE PLATE AND NEEDLE IMAGE PLATE WHEN RECORDING IMAGES IN X-RAY RADIATION FROM LASER PLASMA SOURCE

*N. N. Shamaeva, K. V. Safronov, V. A. Flegentov, A. A. Bushukhin, I. N. Shishkov, A. V. Potapov*

FSUE «RFNC – VNIITF named after Academ. E. I. Zababakhin», Snezhinsk, Russia

Laser plasma sources of X-ray radiation obtained by the interaction of high-intensity ultrashort laser pulses with target material, due to their unique features (short duration  $<1$  ps, small size of the emitting area  $<0.5$  mm, high photon energy  $>1$  MeV), are a promising tool for pulsed radiography of fast processes.

Experiments on transillumination of steel samples with a thickness from 2 to 50 mm were carried out using a high-power picosecond laser installation. X-ray radiation was generated by irradiating solid-state tungsten targets 0.5 and 2 mm thick with high-intensity laser pulses. Registration of radiographic images was carried out using crystal-based photoluminescent detectors image plate (IP) based on  $\text{BaFBr:Eu}^{2+}$  crystals [1] and needle image plate (NIP) detectors (based on the  $\text{CsBr:Eu}^{2+}$  crystals [2]). The obtained images were used for a comparative analysis of the detectors characteristics (spatial resolution, resolution on the density of transilluminated objects, etc.).

## References

1. **Boutoux, G.**, Batani D., Burgy F. et al. // Rev. Sci. Instrum. – 2016. – Vol. 87. – P. 043108.
  2. **Paul, J. R.** Leblans New Needle-crystalline CR Detector, Research&Development of Materials, Technical Imaging.
-