## DOI: 10.34854/ICPAF.52.2025.1.1.139

## EXPERIMENTAL RESEARCH OF LIGHT AMPLIFICATION IN CHANNELS OF MJ LASER FACILITY $^{\ast)}$

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Laser energy management is one of the priority areas of research for large-scale laser facilities, which determines the prospect of implementing a wide range of scientific programs in the field of high energy density physics.

In 2023, as part of the multi-purpose research complex (MRC), the first phase of 16 channels of a megajoule energy level laser installation was commissioned [1]. The amplifier channels of the facility are built according to a four-pass amplification scheme a laser beam in two disk amplifiers with a light aperture of  $385 \times 385$  mm, based on a neodymium phosphate glass slabs. To provide the laser pulse energy specified in the experiment, it is required to determine the values of the gain and passive losses of laser beam for each channel.

This paper presents the results of experimental studies of the small signal gain distribution on the aperture of disk amplifiers containing neodymium phosphate glass slabs of different brands, as well as the results of measuring the transmission of radiation in laser channels of the MRC in two passes. Based on the obtained results, experiments were carried out on the formation of laser pulses with different output energy at the output of the channels. Considerable attention has been given to the problem of equalizing the energy of laser pulses between channels.

## References

 Bel'kov S.A., Garanin S.G., Rogachev V.G., Derkach V.N., Gus'kov S.Yu. Report at the XLVIII International (Zvenigorod) Conference on Plasma Physics and ICF, March 15-19, 2021

<sup>\*)</sup> abstracts of this report in Russian