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## DEVELOPMENT OF THE THOMSON SCATTERING SYSTEM FOR THE GOL-NB INSTALLATION <sup>\*)</sup>

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The main task of the GOL-NB installation [1] is to test the efficiency of multimirror plasma confinement. To solve this problem, precise measurements of the radial profiles of plasma concentration and electron temperature are required. In this regard, the Thomson scattering (TS) diagnostic system is currently being developed, which is the most reliable and reliable means for measuring the above plasma parameters.

The system is designed to measure plasma parameters in the concentration range  $10^{18}$ - $10^{20}$  m<sup>-3</sup> and electron temperatures 3-100 eV. The neodymium glass laser ( $\lambda=1064$  nm) Beamtech SGR Extra with a pulse energy of up to 15 J has used at the system as the light source. Laser radiation scattered in the plasma is collected by the lens of the registration system and is directed through fiber-optic lines to the inputs of spectral devices. It is planned to equip the system with eight spectral devices for simultaneous measurement of the distribution of plasma parameters along the radius.

The four-channel polychromators based on interference filters [2] are used for spectral selection at the system. The filter passbands provide measurement of the plasma parameters with the accuracy of no worse than 5% over the entire range of being expected plasma parameters. The avalanche photodiodes LSSAPDQ-1800 Beijing Lightsensing Technologies Ltd are used to registration radiation.

The parameters of the system and the results of testing its elements will be presented in the report.

### References

- [1]. V. Postupaev et al., Start of experiments in the design configuration of the GOL-NB multiple-mirror trap // Nuclear Fusion 62(8), 086003 (2022)
- [2]. Kurskiev G.S. et al. Digital filter polychromator for Thomson scattering applications // Nuclear Inst. and Methods in Physics Research, A. – 2020. – T. 963. – C.163734

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<sup>\*)</sup> [abstracts of this report in Russian](#)