PHYSICAL BASIS AND PLANS FOR THE DEVELOPMENT OF RESEARCHES IN THE FIELD OF MAGNETIC TRAPS WITH LINEAR CONFIGURATION AT BINP [[1]](#footnote-1)\*)

DOI: 10.34854/ICPAF.2020.47.1.009

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Currently, the Budker Institute is developing a new generation project of an open type magnetic trap with a linear axisymmetric configuration - Gas-Dynamic Multi-mirror Trap (GDMT). The main goal is to develop the technologies necessary for implementing a number of thermonuclear applications of such systems: from powerful neutron sources to an energy reactor capable of working with fuels, not containing radioactive tritium and having an unlimited resource of extraction [1,2].

It is assumed that the GDMT will have a modular structure that allows you to quickly reconfigure the magnetic system to develop plasma confinement technologies both in neutron sources for various purposes and in a diamagnetic trap [1,3]. The magnetic system of the installation is supposed to be superconducting with a field of up to 3 T in the central plane of the trap and more than 12 T in magnetic plugs. Together with neutral injection with a power of 10 MW (particle energy of 30-40 keV) and operating time of the range of seconds should provide stationary conditions for plasma confinement.

The report provides an overview of the results of a number of works that make up the physical basis of the project, including recent work carried out in preparation for its physical justification. The parameters of the GDML magnetic system based on traditional low-temperature superconductors are compared with the parameters of the corresponding system made using high-temperature superconductivity.

References

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