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Superconducting magnets developed in BINP: status of works

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Various superconducting magnets are being developed and manufactured in Budker Institute of Nuclear Physics, Novosibirsk.

Major works are focused on insertions devices for the currently built SKIF – new source of synchrotron radiation research. This project demands at least 10 insertion devices including superconducting wigglers and undulators having high magnet and cryogenics parameters. Three superconducting wigglers will be manufactured and tested in 2023.

Two detector magnets for FAIR project, Darmstadt, Germany are manufactured in BINP. One of them is superconducting dipole magnet for CBM detector and the second one is superconducting solenoid for PANDA detector.

The CBM detector will research compressed baryon matter on the FAIR facility, GSI, Darmstadt. The superconducting dipole magnet of this detector provides vertical magnetic field with field integral ~ 1 T*m along a beam length of 1 m. The warm bore distance between the dipole coils is 1.44 m. Maximal magnetic field on the superconducting winding is 3.6 T. The stored energy of the magnet is ~ 5 MJ.

The superconducting solenoid of PANDA detector is designed to provide 1.2 T magnetics field in volume of 3 m of length and 2.0 m of diameter. The iron yoke of this detector has weight of 240 tons; it was manufactured and assembled.

The status of these works will be presented in the session.

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