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A set of equipment for measuring and investigating the magnetic field at the reference magnet of the NICA booster

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The NICA accelerator complex is being constructed in JINR, Dubna. It includes Electron String Ion Source, 6.2 MeV/u linac, 600 MeV/u booster synchrotron and collider. The booster will accumulate $4 \cdot 10^{9+}$ Au^{32+} ions, accelerate heavy ions from 6.2 up to 600 MeV/u for Au^{32+} and form required beam emittance with the help of electron beam cooling. The cryogenic magnetic system of the booster, in addition to superconducting bending dipoles and quadrupole magnets, contains a separate reference magnet. In this magnet a set of cryogenic magnetic sensors is located, which includes inductive sensors, as well as the "cold" NMR sensor. The first inductive sensor is intended to operate with the digital LLRF controller of the booster RF system. The second one generates signal for precision integrators, which allow investigate with high accuracy behavior of the magnetic field during accelerating cycle and also field ripples. The "cold" NMR sensor is planned for calibration of the inductive sensors in order to determine the sensor's area accurately. The report describes the design and technology of manufacturing cryogenic sensors, their parameters are given. The possibilities of electronic devices for working with sensors are presented.

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