

CONTROL SUBSYSTEM FOR NUCLOTRON CRYOGENICS.

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Nuclotron - the superconducting synchrotron - was put intooperation at the LHE JINR in 1993. The cryogenics subsystem of the Nuclotron Control System is described. The parameters undercontrol are the quality of two-phase flow (the mass vapour content of helium in the supply headers), the densiyi and flowrate of two-phase cryoproduct flows. The principle of measurementis based on the dependence of the resonance frequency of an oscillating RF-resonator with a high Q-factor on dielectric permeability of the controlled flow. The cryogenics control and measurement subsystem provides a helium pressure measurement in direct and back flows, the helium and nitrogen levels and pressure in the separators and storage tanks, as well. The subsystem provides the temperature measurements of the Nuclotron elements at more than 600 control points. The measurement range is from 4 to 300 K with the resolution of 25 mK at temperature of 4 K. As temperature sensors the carbon resistors are used. The 7-th power polynom describes the sensor resistance dependence on the element'stemperature. The hardware interface is CAMAC and PC based.