LNP-2

Complex Research of the Unclosed HTS Shield for Improving Homogeneity of the Magnetic Field

*Evgeny Kulikov[1], Gennady Dorofeev[1,2], Kamil Kozlowski[1,3], Lukasz Tomków[4], Valery Drobin[1]

Joint Institute for Nuclear Research, Veksler and Baldin Laboratory of High Energy Physics, Joliot-Curie 6, 141980 Dubna, Russia[1]
National Research Center «Kurchatov Institute», Akademika Kurchatova pl. 1, 123182 Moscow, Russia[2]
GSI Helmholtz Centre for Heavy Ion Research, Planckstraÿe 1, 64291 Darmstadt, Germany[3]
Wroclaw University of Technology, Faculty of Mechanical and Power Engineering, Wybrzeze Wyspianskiego 27, 50-370 Wroclaw, Poland[4]

Homogeneous magnetic fields are required in different applications. The resolution of MRI techniques depends on the quality of the magnetic field, as well as the efficiency of electron cooling systems used at particle accelerators. Unclosed magnetic shield made of superconducting tapes is able to nullify the radial component of a solenoidal magnetic field, forming the long region of the homogeneous magnetic field.
The shield is a lengthwise winding made from (Y)BCO tapes are wound along a carcass generatrix. Then it is positioned coaxially inside an electromagnet. The measurements were carried out under quasistationary conditions, magnetic fields up to 1 kG at 77K.
This poster discusses the design of the superconducting shield and presents experimental and numerical studies into the homogeneity of the magnetic field in solenoids with the superconducting shield.