



Contribution ID: 77

Type: Talk

A Cryogenic Current Comparator for Absolute Ion Beam Current Measurement

For slow extraction from the SIS 100 synchrotron, the high energy beam transfer lines of FAIR accelerators demand for diagnostic devices for non-intercepting measurement of beam currents down to nA range. A Cryogenic Current Comparator (CCC) offers the required absolute and non-intercepting current. The current resolution of the CCC is only limited by the system noise, mainly originating from external magnetic fields and mechanical vibrations. A meander-shaped superconducting shielding efficiently suppresses non-azimuthal field components from coupling with the pick-up coil. The attenuation of external magnetic field components in different directions is studied for various geometrical and material parameters by means of an FEM simulation. The results are compared with experimentally calculated attenuation factor. The status of the re-commissioning of a CCC prototype at GSI for the optimized performance in the FAIR accelerators will also be discussed.

Author: KURIAN, febin (GSI)

Co-authors: REEG, Hansjoerg; SCHWICKERT, Marcus; Dr HUELSMANN, Peter (GSI Helmholtzzentrum für Schwerionenforschung GmbH); KOWINA, Piotr (GSI Darmstadt); Mr NEUBERT, Ralf (Friedrich-Schiller-Universität Jena); Mr GEITHNER, Rene (Friedrich-Schiller-Universität Jena); Prof. VODEL, Wolfgang (Friedrich-Schiller-Universität Jena)

Presenter: KURIAN, febin (GSI)