

## **Electro-thermal 1D model of the SIS100 superconducting dipole magnet**

The FAIR Project –a new international Facility for Antiproton and Ion Research is under construction in Darmstadt, Germany. The core machine at FAIR is the SIS100 synchrotron which utilises superconducting magnets in order to guide the heavy ion beam. The bending component of the magnetic field is generated by superferic window-frame dipole magnets symmetrically distributed over the six arc sections of the accelerator ring. The dipole coils are wound with a LTS low AC loss Nuclotron-type cable. Due to the very thick inter-turn insulation, the coil is characterized by a strong anisotropy of thermal conductivity which enables application of a 1D electro-thermal model. This work presents the latest version of the magnet model used for the simulation of magnet's operating modes at the test facility (including quench). Since currently the series dipole magnets undergo acceptance tests at cryogenic conditions, the simulation results are compared to the available measurements.

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