

Cold testing of rapidly-cycling model magnets for SIS 100 and SIS 300 – methods and results

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The FAIR project's two synchrotrons, SIS 100 and SIS 300, are equipped with rapidly-cycling superconducting magnets.

The GSI Prototype Test Facility has been commissioned. It allows measuring all relevant parameters of rapidly-cycling magnets, such as field quality, cryogenic losses (using the V-I and the calorimetric method), quench behaviour and hydraulic resistance.

One early version of a SIS 300 $\cos(\theta)$ - type model dipole (GSI001), constructed at BNL and cooled with supercritical helium, was tested. The results were compared to those measured at BNL in liquid helium.

One SIS 100 superferric model dipole (4KDP6a), constructed at JINR (Dubna) and cooled with 2-phase helium, was tested as well. The data are in good agreement with the results obtained at JINR.