Contribution ID: **7** Type: **not specified**

HINS SS1 Magnetic Performance Studies

Wednesday, 5 August 2009 13:00 (20 minutes)

This paper offers an analysis of the performance of the HINS SS1 as recorded by a magnetic measurement Hall probe array. These superconducting solenoids are under development for a R&D project named High Intensity Neutrino Source. The project design demands an especially small stray field due to adjacent RF cavities. The Hall probe array was fitted with small test coils for probe calibration and testing. Each probe's sensitivity was measured at diminishing magnetic fields, and the system's ability to resolve and recover the amplitude of the magnetic field was determined. The system was found to resolve magnetic fields well under 10 μT. These results were reproduced at superconducting temperatures using a different Hall probe excitation method and the stray field found to satisfy the design requirements to first approximation.

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