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HTS Dipole Magnet Model for the Persistent Current Operation

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Recent advances in the fabrication of high-temperature superconducting (HTS) coils allow the design of superconducting accelerator magnets working in a persistent current mode. There are many various rather low field magnets in the particle accelerators which operated in the DC current mode. At Fermilab was designed, fabricated, and tested the HTS dipole magnet model having 20 mm air gap and the magnetic field up to 1 T. The magnet has a primary copper coil which works a short period of time to pump the energy in the short-circuited secondary HTS coil. In the paper presented design, fabrication, and test of this magnet at the liquid nitrogen temperature.

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