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Wed-Af-Po3.15-07 [11]: HTS Quadrupole Magnet for the Persistent Current Mode Operation

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The new high temperature superconducting (HTS) quadrupole magnet with circular coils was designed and built at Fermilab. There were investigated also several HTS coils at the liquid nitrogen temperature. The main goal of this activity is to investigate coils, and the magnet operation in a persistent current mode to reduce accelerator magnets capital and operational expenses. For that was used HTS persistent current switch and short-circuited coils. In the paper discussed magnet design, fabrication, and tests. There were measured magnetic field in the magnet aperture and the field decay when the magnet operates in the "frozen flux" mode. The test results are compared with simulations and confirmed advantages of the proposed approach.

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