

Low Temperature Quench Performance of Fermilab

Low Beta Insertion Quadrupoles*, R. BOSSERT, S. FEHER, S.A. GOURLAY, T. HEGER, J. KERBY, M.J. LAMM, P.J. LIMON, P.O. MAZUR, T. NICOL, F. NOBREGA, D. ORRIS, J. OZELIS, T. PETERSON, P. SCHLABACH, J. STRAIT, J. TOMPKINS, A. ZLOBIN, FNAL*;
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LBNL** - The two low beta insertion regions in Fermilab's Tevatron include superconducting cold iron quadrupoles utilizing a 2-shell, $\cos 2\theta$ coil geometry with a 76 mm aperture. The maximum gradient at 4.2 K is 141 T/m. The recently revived magnet program at Fermilab is currently focused on the development of high gradient quadrupoles for possible use in the LHC IR's. In order to provide input for the new design which will operate at 1.8 K, we have tested the original coldmass design and compared its low temperature performance characteristics to a heavily instrumented version, mechanically modified to take advantage of the gain in critical current.

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