BNL-103884-2014-TECH

AGS.SN3;BNL-103884-2014-IR

Low Field Corrections for D.C. F10 Magnet

J. Herrera

April 1973

Collider Accelerator Department

Brookhaven National Laboratory

U.S. Department of Energy

USDOE Office of Science (SC)

Notice: This technical note has been authored by employees of Brookhaven Science Associates, LLC under Contract No.AT(30-1)-16 with the U.S. Department of Energy. The publisher by accepting the technical note for publication acknowledges that the United States Government retains a non-exclusive, paid-up, irrevocable, world-wide license to publish or reproduce the published form of this technical note, or allow others to do so, for United States Government purposes.

DISCLAIMER

This report was prepared as an account of work sponsored by an agency of the United States Government. Neither the United States Government nor any agency thereof, nor any of their employees, nor any of their contractors, subcontractors, or their employees, makes any warranty, express or implied, or assumes any legal liability or responsibility for the accuracy, completeness, or any third party's use or the results of such use of any information, apparatus, product, or process disclosed, or represents that its use would not infringe privately owned rights. Reference herein to any specific commercial product, process, or service by trade name, trademark, manufacturer, or otherwise, does not necessarily constitute or imply its endorsement, recommendation, or favoring by the United States Government or any agency thereof or its contractors or subcontractors. The views and opinions of authors expressed herein do not necessarily state or reflect those of the United States Government or any agency thereof.

Blomberg

No. 3

J C Herrera, April 5, 1973

Low field corrections for d.c. operated F-10 magnet

A. Conditions of F-10:

1) d.c. 5280 amperes
2) Position 1.8"

B. Corrections arrived at:

1) Dipole windings (backleg) on F-9 and F-11 powered with 8 amperes (6 turns)
2) Quadrupole winding (backleg) on F-9 and F-10 powered with 2.5 amperes
3) Low field dipoles — F04, F08, F12 were changed.
4) Zero theta skew quadrupole had to be increased considerably
5) Septupoles (vertical) had to be changed.

C. Results:

1) without the F-10 powered and beam at 2.9" max beam ~ 4.0×10^{12} p/p
2) with F-10 under d.c. conditions max beam ~ 3.7×10^{12} p/p
3) with F-10 out but corrections still on max beam ~ 1.7×10^{12} p/p

D. Conclusions:

The correction had to be done by successively moving in the F-10 magnet and at each position adjusting the various corrections. This was made difficult because coherence was observed on the beam for higher early intensities. Further careful study on this problem is required, but it appears that the machine can be corrected for this mode of operation of F-10.