

Magnetic Design of the Inflector Test Stand

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1 Introduction

We are considering modifying the existing “Bonnie” dipole to serve as a spiral inflector test stand. To replicate the magnetic field distribution experience by the spiral inflector the proposed solution was to drill a hole thorough the the top and bottom yoke [1]. In this note we will present an updated version of the magnetic design.

2 Proposed modification

Magnetic (full) gap	18.8 inch
Hole diameter	6.5 inch
Hole position	centered
Shim radius	31 mm

Table 1: Summary of the proposed modification

3 Resulting Magnetic field distribution

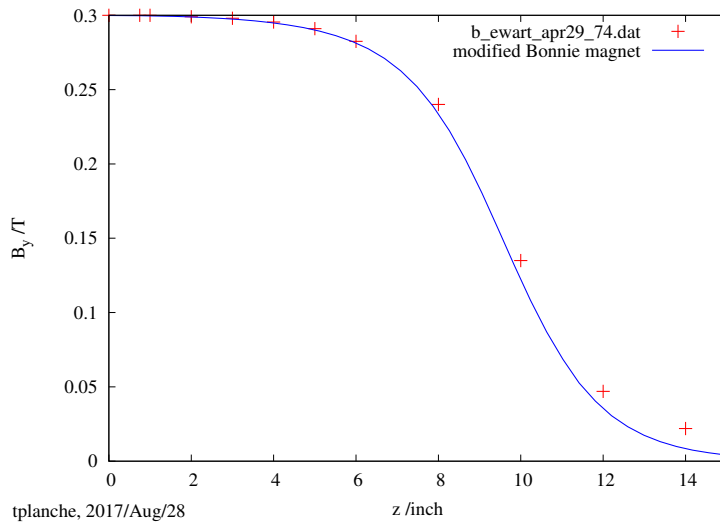


Figure 1: Field distribution along the magnet axis compared to the field measured along the axis of the cyclotron (in April 1974)

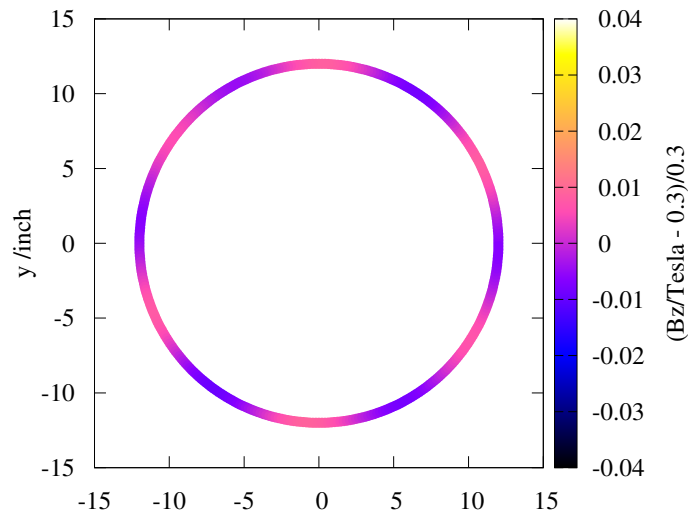


Figure 2: Field survey at r=12 inch, on the cyclotron midplane (from the file policyinita6.dat)

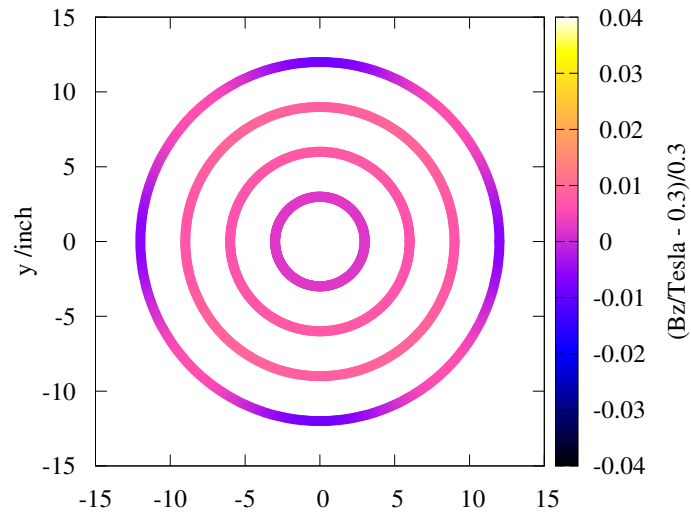


Figure 3: Modified Bonnie magnet with shims

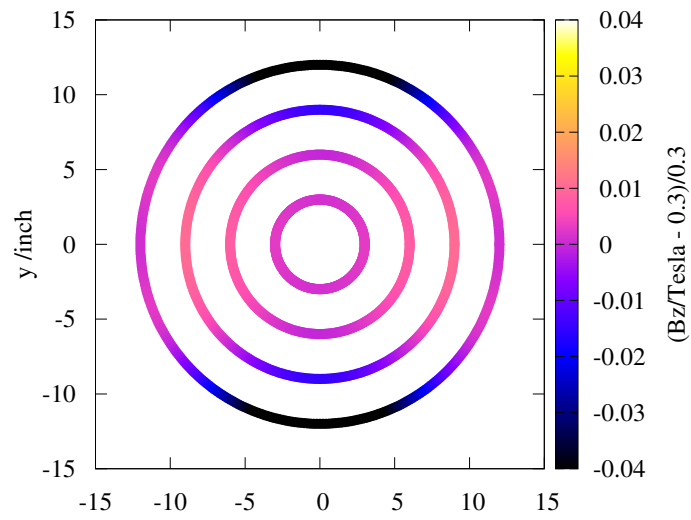


Figure 4: Modified Bonnie magnet without shims

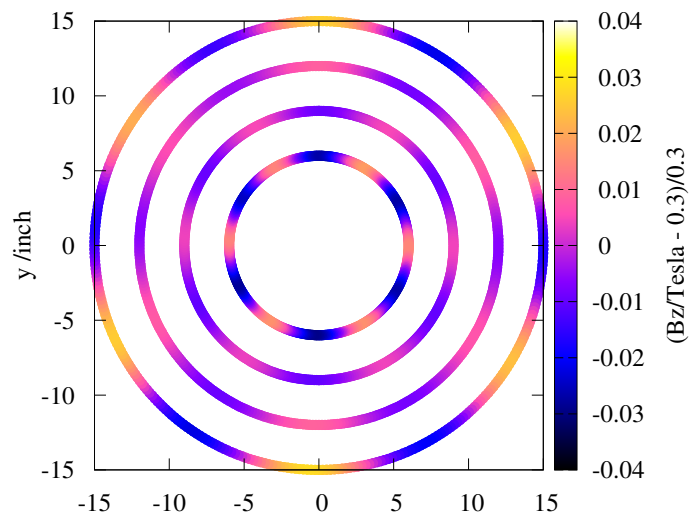


Figure 5: Field from the file policyinita6.dat at r=3 to 15 inch. Data for radii ≥ 12 is not from actual measurements (see Ref.[2])

References

- [1] M. Basso, [Modelling BL4N magnets using opera to assist with quantifying leakage fields along the EHBT line](http://lin12.triumf.ca/text/design_notes/TRI-BN-16-08_Basso_BL4N.pdf), Tech. Rep. TRI-BN-16-08, TRIUMF (2016).
URL http://lin12.triumf.ca/text/design_notes/TRI-BN-16-08_Basso_BL4N.pdf
- [2] E. Auld, D. Livesey, A. Otter, N. Rehlinger, The magnetic field survey system for the triumph cyclotron magnet, in: Proc. 4th Int. Conf. Magnet Technology, 1972.