



Brookhaven
National Laboratory

BNL-101668-2014-TECH

RHIC/AP/12;BNL-101668-2013-IR

Lattice and Magnet Design Assumptions

H. Hahn

January 1985

Collider Accelerator Department
Brookhaven National Laboratory

U.S. Department of Energy

USDOE Office of Science (SC)

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LATTICE AND MAGNET DESIGN ASSUMPTIONS

H. Hahn

Brookhaven National Laboratory

January 4, 1985

1/4/85

MAGNET CONSTRAINTS:

1) FOR 100 GeV/amu Au OPERATION

ARC DIPOLE 10m EFF; $B_{arc} = 3.26$ T
 8 cm COIL APERTURE

BC2 4.1 T, LENGTH AS REQUIRED
 SINGLE LAYER COSINE
 COIL APERTURE 10 cm

BC1 5.5 T, LENGTH AS REQUIRED
 DOUBLE LAYER COSINE
 ~ 20 cm COIL APERTURE

ARC QUADS $G/B_{arc} = 19.84$ m⁻¹

INS QUADS SPECS TO BE DEVELOPED
 PROBABLY 2 LAYER COSINE, 13 cm COIL APERTURE
 FOR SYNCH: EQUAL TO ARC

GOOD FIELD ROOM FOR 6σ (30 GeV) IN ALL MAGNETS
 CHROMATIC AND RANDOM ERRORS CORRECTED

DEFINE QC AS REQUIRED BY LATTICE

MAGNET DIVISION WILL PROVIDE CONCEPTUAL DESIGN
 COSINE, WINDOW FRAME, SEPTUM DIPOLE

2) HIGH ENERGY p OPERATION (~ 345 GeV)

EQUAL QUENCH MARGIN IN ALL DIPOLES

BC2 = 4.5 T

BC1 = 6 T

$B_{arc} = 4.5$ T

ACCEPT IRON SATURATION EFFECTS

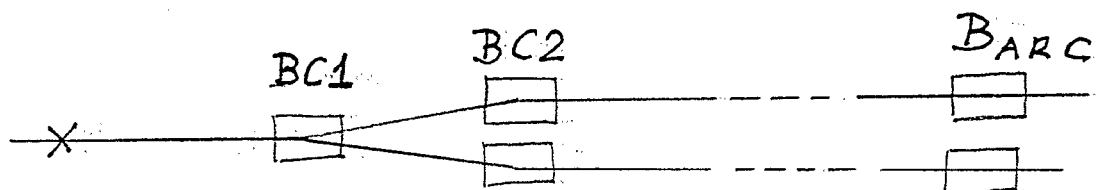
ALL CORRECTION ELEMENTS DESIGNED FOR HIGH FIELD OPERATION

LATTICE SUMMARY

STUDY 2 LATTICES

- SYMMETRICAL
- ASYMMETRICAL

BASED ON FOLLOWING DESIGN ASSUMPTIONS:



FREE SPACE TO BC1

- ± 11 m TO EFFECTIVE POSITION (SYNCH)
- ± 10 m FOR PHYSICS

INNER/OUTER RING SPACING

35 cm

DESIGN INSERTION FOR OPTIMUM LUMINOSITY Au/Au

30 - 100 GeV/amu

$\alpha = 0$ - 2 mrad FOR Au-Au, Au-p

RETUNE INSERTION FOR HIGH ENERGY p OPERATION

WITHOUT PHYSICAL CHANGE

$\alpha \neq 0$ ACCEPTED