

BNL-104616-2014-TECH

AGS/AD/Tech Note No. 188;BNL-104616-2014-IR

A REFINEMENT TO THE A/B RING LATTICE

Y. Y. Lee

August 1983

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.DE-AC02-76CH00016 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.

Accelerator Department BROOKHAVEN NATIONAL LABORATORY Associated Universities, Inc. Upton, New York 11973

AGS Division Technical Note No. 188

A REFINEMENT TO THE A/B RING LATTICE

Y.Y. Lee

August 8, 1983

A modification to the A/B ring lattice¹ which gives somewhat better characteristics is proposed. The new lattice has the same tune as the old lattice, but it has better behavior for half integer resonance at 4.5. The main difference is that the new lattice has 16 cells (32 half cells) and every fourth half cell has a long straight section. This can be compared to the old 18 cells (36 half cells) with every other half cell having a long straight section. There are only eight straight sections compared to 18, however, they are somewhat longer than the old straight section. Table I gives the results of the thin lens calculation for this lattice.

¹ BNL Informal Report 32949

TABLE I

	01d	New
Circumference	134.52 m	134.52 m
Periodicity	18	8
Number of Cells	18	16
Number of Straight Sections	18	8
Cell Length	7.473 m	8.406 m
Straight Section Length	3.24 m	3.7 m
Phase Advance/Cell	94°	106°
$v_{\rm X} \sim v_{\rm y}$	~ 4.7	~ 4.7
^β max ^{/β} min	12/2 m	16/2 m
η _{max}	2 m	2 .4 m
Dipoles		
Number	18	24
Length	1. 9 m	2.4 m
Gap	3.25"	3.25"
Field (Inj/@ 1 GeV)	3.73/9.82 kG	2.34/6 kG
Quadrupoles		
Number	36	32
Length	20"	20"
Aperture	8"	8"
Pole Tip Field (Inj/@ 1 GeV)	1.4/3.75 kG	1.6/4.2 kG

Distribution: Dept. Admin. "Booster Club"

- -

¥ 51