

# ANALYSIS OF HEAVY ION LOSS AFTER STRIPPING

Y. Y. Lee

April 1990

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.

**ANALYSIS OF HEAVY ION LOSS AFTER STRIPPING**

**BOOSTER TECHNICAL NOTE  
NO. 161**

**Y. Y. LEE**

**APRIL 6, 1990**

**ALTERNATING GRADIENT SYNCHROTRON DEPARTMENT  
BROOKHAVEN NATIONAL LABORATORY  
UPTON, NEW YORK 11973**

## LOCATION OF THE STRIPPING LOSS OF THE BOOSTER GOLD ION

Y. Y. LEE

A concern was raised about the stripping loss for the very heavy ions accelerated in the Booster. Because about 50% of the gold accelerated in the Booster will not be fully stripped by the stripper located in the BTA line, the effect of those ions on the radiation level outside of the tunnel may be a concern.

The results of an experiment done at Berkeley\* indicate that 350 MeV per nucleon gold ions will have the following equilibrium charge distribution after going through a stripping target.

<u>Charge</u>	<u>Fraction (%)</u>
79	50
78	34
77	8
< 76	8

As shown in the figure, the 8% of the ions with a charge less than or equal to 76 will be lost inside the second  $16^\circ$  bending magnet, the 8% with charge 77 hit the vacuum pipe around the quadrupole immediately upstream of the shielding wall between the Booster and the AGS, and the 34% with charge 78 will scrape along the vacuum pipe which is located inside the shielding wall.

-----  
\* P. Theiberger, Private communication.

