BNL-105205-2014-TECH

Booster Technical Note No. 161;BNL-105205-2014-IR

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)

DISCLAIMER

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 abut 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.

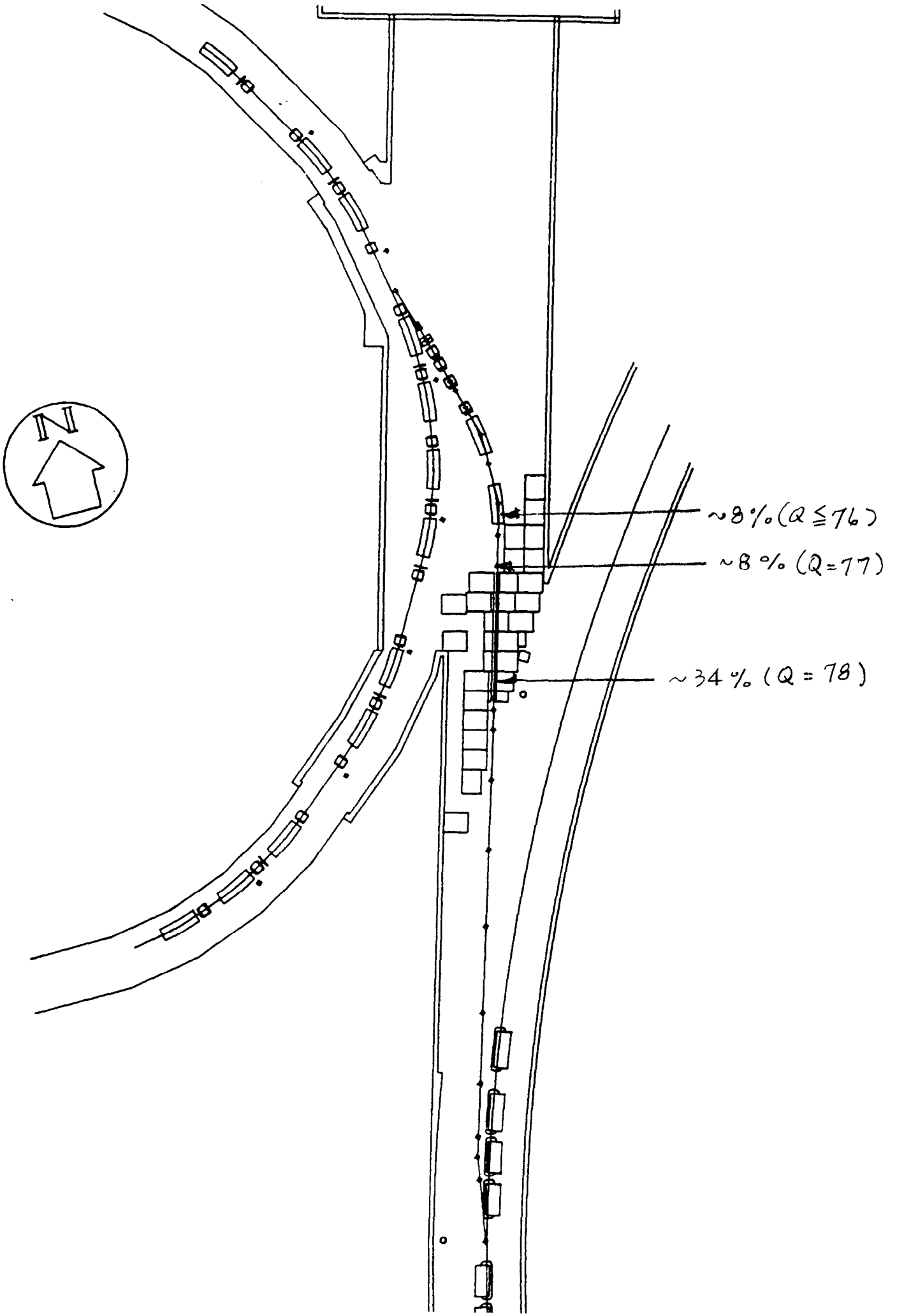
The results of an experiment done at Berkeley* indicate that 350 MeV per nucleon gold ions will have the following equilibrium charge distribution after going through a stripping target.

Charge	Fraction (%)
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^{0} bending magnet, the 8% with charge 77 hit the vacuum pipe around the quadruple 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.


N
~8% (Q ≤ 76)
~8% (Q=77)
~34% (Q = 78)