BNL-103927-2014-TECH

AGS.SN48;BNL-103927-2014-IR

Intensity vs. Operating point (?H, ?H) at Injection

M. Q. Barton

December 1973

Collider Accelerator Department

Brookhaven National Laboratory

U.S. Department of Energy

USDOE Office of Science (SC)

DISCLAIMER

Studies - Dec 4 (2000) to Dec 5 (0300), '73. No. 48

M Q Barton, J. Claus, E. Gill, J. Herrera.

Claus measured emittances in injection line + found reasonable results, i.e. poor match probably not explaining poor injection. Machine stability rather poor to try to improve steering, etc.

We explored trying to improve situation by moving operating point. First found $\Delta\nu_H$ & $\Delta\nu_V$ moved just according to theory but with wrong sign using ν-shift quads. Must be lead reversals somewhere on these quads. Next tried to tune near $\nu_V \sim 9$ and $\nu_H \sim 8.7$. Could indeed accelerate here but not with comparable intensity as $\nu_H \sim 8.85$, $\nu_V \sim 8.7$. Tried using point near vertical integral to optimize 90 dipole correctors and vertical steering but could not achieve any significant improvement. There is a possible improvement of few percent going back to horizontal near $\nu_H \sim 9$ and tuning horizontal 90 dipoles. Machine ran rather poorly all night for this type of tuning.

We need to understand better why we can't run at what should be a better operating point and what the operating point does vs. time.