

Intensity vs. Operating point (β_H , β_H) at Injection

M. Q. Barton

December 1973

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.AT(30-1)-16 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.

Studies - Dec 4 (2000) to Dec 5 (0300), '73.

M. Q. Barton, J. Claus, E. Gill, J. Newman. No. 48

Claus measured imittances 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 ΔV_H & ΔV_V moved just according to theory but with wrong sign using V -stiff quads. Must be lead reversal somewhere on these quads. Next tried to tune near $V_V \sim 9$ and $V_H \sim 8.7$. could indeed accelerate here but not with comparable intensity as $V_H \sim 8.85$, $V_V \sim 8.7$. Tried using point near vertical integral to optimize 90 dipole corrections and vertical steering but could not achieve any significant improvement. There is a possible improvement of few percent going back to horizontal near $V_H \sim 9$ 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. tune.