

Low Field Tuning. Effect of Shorting 8 RF Cavities

E. Raka

January 1974

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.

Blumberg
NO. 51

E. Paka, E. Gill AGS Studies 0700-1900 1/29/79

At the beginning of the period the machine was operating at $> 7 \times 10^{12}$ per pulse. Considerable time was spent on photographing various signals at this intensity level. Very minor readjustments of the δ parameters were made and only the 90 harmonic low field corrections were trimmed. The latter produced a few pulses $> 8 \times 10^{12}$ accelerated. Considerable transition loss ($\approx 1.5 \times 10^{12}$) was present at these levels when attempts were made to carry the beam to higher energies. At 1000 the AGS was turned off to install shorts across 8 of the ten δ stations. By 1200 beam was again injected. Acceleration for ≈ 50 msec was possible but the steady capture using the low voltage capture mode was still $\approx 7.5 \times 10^{12}$. A further rise from level 1 to level 2 than what had been used previously gave $\approx 6.7 \times 10^{12}$ while a down side with a lower level 1 and programmed frequency gave $\approx 7.3 \times 10^{12}$. Since it appeared that level 2 was not high enough with two stations on the shorts were removed from 2 of the 8 locking coefficients. The results with four were no better than two or ten stations and increasing instability of the injection conditions made further tests useless. The remaining stations were put back on the air and after some time ~~and~~ beam was again accelerated with ^{peak} intensities of $> 7 \times 10^{12}$. However instabilities at injection became worse and tuning was not possible ~~with each~~.