BNL-103933-2014-TECH

AGS.SN55;BNL-103933-2014-IR

Activate Triple Switch at Transition

E. Raka

March 1974

Collider Accelerator Department

Brookhaven National Laboratory

U.S. Department of Energy

USDOE Office of Science (SC)

DISCLAIMER

Blemberg
NO. 55

E Rabin AGS Studies 0800-1100 3/5/74

Purpose: To activate the triple switch for passage through the transition energy.

Results: By the end of the period the triple switch phase jump at transition was operating at intensities of up to 6×10^{12}. The amount of "transition blast" damage $\approx 10\%$ of the CBM reading. This is the normal amount at these intensities with only the single phase jump. Also the observed debunching was not significantly less than normal.

Comments: The time intervals between jumps was based on Brown's calculations for $\nu = 1.3$ (for the AGS $\nu_0 \approx 1.2$ at 5×10^{12} has been estimated) with the first jump assumed to be at transition. Time must be spent before these values could be varied. Also the machine intensity was quite variable and comparisons would have been almost impossible.

It was necessary to clamp the radial error signal at the start and finish of the triple switch sequence. Thus while it could not effect the phase during the sequence it could still cause fluctuations in the first and third jump amplitudes. This mode of operation was better than the unclamped case or the case where the clamp bracketed the triple switch timing sequence.

This integration with the radial loop will have to be minimized before a thorough test of the triple switch can be made. It was found that due to beam shape oscillations or intensity variations the radial error signal is not the same from pulse to pulse. When the signal this second is reduced at transition a corresponding phase jump occurs. Thus the total jump will vary and the resulting phase will not be exact during a radial excursion etc.

The first step will be to investigate the driving force of the instability dependence with shape oscillations that stand around 215 msec and when the damping loop cannot completely control.