BNL-103942-2014-TECH

AGS.SN64;BNL-103942-2014-IR

# Beam Capture in High Voltage (150 KV peak) mode. Horn instabil.

E. Raka

May 1974

Collider Accelerator Department

**Brookhaven National Laboratory**

**U.S. Department of Energy**

USDOE Office of Science (SC)

# DISCLAIMER

5/10/74 AGS Studies 0200-0600 E. Raka

The first part of this period was used to adjust the RF parameters for the high voltage capture mode (≈150Kv peak) giving a peak intensity of $5.5\times10^{12}$. Also the FEB was set up in parallel operation. At $\approx 2.5\times10^{12}$ the horizontal instability seen on 3/15 and earlier occassions was observed at around 500msec (H-7 position ±2-3mm and no debunching at transition). When the intensity was increased to $>5\times10^{12}$ the horizontal growth occured at ≈350msec for H-7 position $>0$. For H-7, $<0$ the fast vertical growth was seen at about 320msec. This is an individual bunch instability with a very rapid growth rate (e folding time a few msec!) that results in beam loss. The intensity threshold was not established but it is $>2.5\times10^{12}$.

The remainder of the time was spent studying the horizontal instability as a function of radial position. It moves somewhat in time as a function of r for a fixed intensity. Also the nature of the signal changes on different electrodes as one changes r. As noticed previously one does not see the same type of difference signal on the individual electrodes (H-7 66-15 for example) for a given set of conditions. Thus the nature of this growth remains a mystery.