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

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The first part of this period was used to adjust the RF parameters for the high voltage capture mode ( $\approx 150$  kv peak) giving a peak intensity of  $5.5 \times 10^{12}$ . Also the FEB was set up in parallel operation. At  $\approx 2.5 \times 10^{12}$  the horizontal instability seen on 3/15 and earlier occasions was observed at around 500 msec (H-7 position  $\pm 2-3$  mm and no debunching at transition). When the intensity was increased to  $> 5 \times 10^{12}$  the horizontal growth occurred at  $\approx 350$  msec for H-7 position  $> 0$ . For H-7,  $< 0$  the first vertical growth was seen at about 320 msec. 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  $> 2.5 \times 10^{12}$ .

The remainder of the time was spent studying the horizontal instability as a function of radial position. It would be interesting to know what  $m^2$  time as a function of  $r$  for a fixed intensity. Also ~~the~~ 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.