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

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AGS Studies 0200-0600 E. Rakca

The first part of this period was used to adjust the RF parameters for the high voltage capture mode (≈ 150 kv peak) giving a peak intensity of 5.5×10^{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 ≈ 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.