

Test of High Voltage (120 kV peak) Acceleration

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The first part of the period was used in an unsuccessful attempt to improve the spiraling beam present with the operating point of $V_x \approx 8.64$, $V_y \approx 8.77$. Then acceleration with high initial voltage (≈ 120 kV) was tried. This gave about 3×10^{12} max. It was noted that by reducing the linac pulse to ≈ 90 psec from 180 psec the machine seemed to operate in a more reproducible manner. Also the amount of beam present during the first quarter cycle of phase oscillation was less but the overall intensity remained the same. Next quasi-adiabatic capture was attempted and after considerable tuning of the RF parameters plus some low field corrections a few pulses at 5×10^{12} were obtained and operation over 4-5 was fairly steady. If the linac pulse was lengthened the intensity dropped by $\approx 10\%$ and large bunch shape oscillations lasting for up to ≈ 5 msec appeared. The radial loop was slowed down but this did not remove the effect. Also switching to the F-15X FMR as a source of the bootstrap RF did not help. Then the effect started to disappear on most pulses and the intensity drop was only $\approx 5\%$. Returned to the high voltage capture mode and obtained at best 3×10^{12} again. Then the low voltage mode was tried again but at best could only obtain 4×10^{12} . The injected intensity after multistep was only $\approx 9-10 \times 10^{13}$. By measuring the Band phase oscillation frequency it was possible to calculate the capture voltage for the quasi-adiabatic mode. A value of 61.6 kV ^{was obtained} very near to the pre-shutdown values of ≈ 50 kV!