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Beam Tuning to Maximize Accelerated Beam

E. Raka

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Collider Accelerator Department
Brookhaven National Laboratory

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Low Field & Capture Studies (4/16/74), Raker, Gill, Herrera

The machine was "tuned" in order to maximize the accelerated beam.

Conditions

- 1) Lincac ran very well after 0100, giving ~ 70 ma for 140 μ sec. Max after multistart $\sim 1.2 \times 10^{13}$ p/p.
- 2) Per J. Claus, Lincac capacitances were up by approximately 1.5 times their normal values.
- 3) Average ring vac $\sim 3 \times 10^{-7}$ Torr.

Results

- 1) The max beam accelerated was 7.22×10^{12} p/p, with 7.5×10^{12} on the early counter. The machine ran steadily in the 7×10^{12} region.
- 2) In order to achieve 1) it was necessary to compromise the early beam counter reading and the effective turns ratio.
- 3) At one point, we could get 9.45×10^{12} p/p on the early monitor with about 8 turns. However, horizontal coherence appeared at about 20 ms after injected and the beam was very erratic with maxima of about 6.8×10^{12} p/p. The v values under this condition were ($v_H \approx 8.84$; $v_V \approx 8.75$).

JGH, 4/19/74