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Coherence Damper Tests

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U.S. Department of Energy

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DISCLAIMER

NO. 8 Blumberg

Coherence Damper Tests

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The vertical coherence damper system consists of a pair of cathode followers at the B-3 electrodes feeding a difference amplifier whose output is fed to a driver circuit located at B-10. The latter is coupled to a two turn coil about 7' long located in the straight section. The seven magnet spacing produces ~~a~~ an $\approx \lambda/4$ phase shift which is needed to damp the coherent betatron oscillations.

An overall damping rate of $\approx 1.9/\gamma \times 10^3$ sec^{-1} is available. Hence for a growth rate of 230 sec^{-1} at a $\gamma = 1.67$ (observed on 4/6) we have ≈ 5 times the minimum gain necessary for damping.

After making the feedback polarity correct complete suppression of the coherence was obtained up to the maximum available intensity of 4.6×10^{12} (the coherence threshold being around 3.5×10^{12}). The remainder of the time was used to try and increase the machine intensity but with little success. At about 9am the linac developed troubles and the program was terminated