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Control of rf Verniers During Phaseback and Flat Top

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Date 10/6/77 Time 1200-1300 Experimenters E. Gill, J.W. Glenn, H. Weisberg

Subject Control of RF Verniers During Phaseback and Flattop.

OBSERVATIONS AND CONCLUSION

Objective: To improve the stability and reproducibility of the slow extracted beam spill.

Procedure: Until now the tuning servos have been left on during phaseback and flattop. The rf vernier current fluctuates during phaseback and settles at an ill-defined value after rf turnoff. We changed over to a system in which all the vernier currents (except for the one in the locked out station) are clamped at preset levels, starting at the beginning of phaseback. The levels were set to be the same as just before phaseback, so all cavities resonate at the same frequency.

Results: With the change made, the H7 radial difference signal holds more constant during phaseback, and it is possible to have stable operation with a longer phaseback time. There are two stable operating points of the off-frequency bias separated by about 1 harmonic number, with stable ranges of about $\pm$ 0.1 harmonic number, where before there was only one stable setting and it was very critical. The change has been made operational and the spill stability and reproducibility seem to have improved.

Recommendations:

(1) Install a spill duty factor monitor telescope.

(2) Extend the flattop vernier control to the locked out station.

(3) After (1) and (2) are finished, do experiments to see if further improvement can be made by staggering the cavity tunes during flattop.