

Pbar Note 603

Phasing Settings for Stacktail Cooling

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ABSTRACT

The Run II Upgrade Stacktail Momentum Cooling System initial phasing is discussed.

1. The Stacktail Momentum Cooling System

The Run II Upgrade Stacktail Momentum Cooling System is very similar to the Tevatron I design. There are two pickup legs at different positions, with variable gain and phase, along with notch filters near the core frequency. The following assumptions have been used in the design of the stacktail:

- Dispersion in A60 = 8.5 m
- $\eta = 0.012$
- Central revolution frequency = 628860 Hz
- Central energy = 8.83 GeV
- Pickups and electronics cover 2-4 GHz frequency band
- Pickup response as in Pbar 232¹
- 25 dB notch filters

With these assumptions, I have found that a good set of positions for the two cooling legs are at 15.7 MeV (628847 Hz) and -3.8 MeV (628863 Hz). The notch on leg 1 is at -57 MeV (628909 Hz), on leg 2 at -64 MeV (628915 Hz), with the common notch at -63 MeV (628914 Hz). The following table shows the desired phase and delay for the two legs at each energy.

	15.7 MeV leg	15.7 through -3.8	-3.8 MeV leg	-3.8 through 15.7
Delay (psec)	169	106	125	187
Revolution Frequency	628847	628863	628863	628847
Phase (degrees)	206	143	267	328

On the next page are the phase versus frequency for the four cases above, using data from the simulation program.

Figure 1: 15.7 MeV leg phasing. L1 represents leg1 (the 15.7 MeV leg), DL1 is the phase after including the delay. The phase vs frequency curves are shown for beam at 15.7 MeV and at -3.8 MeV.

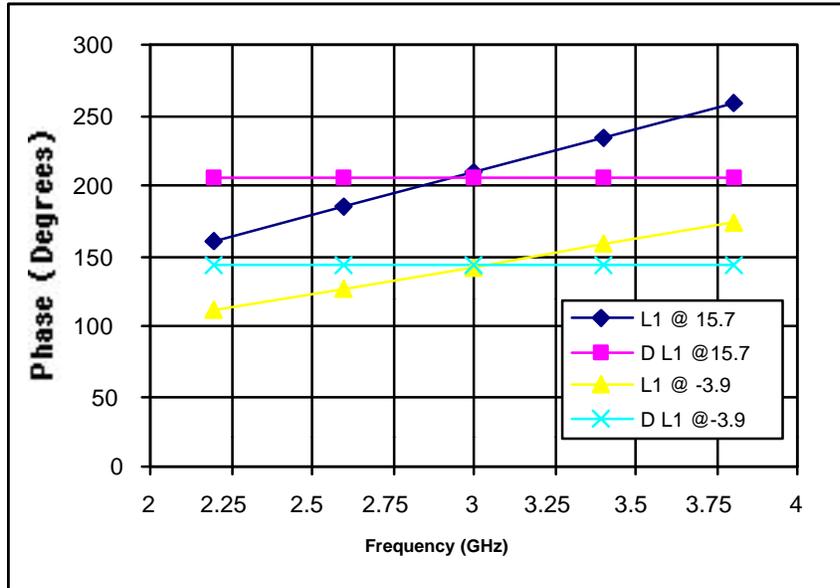
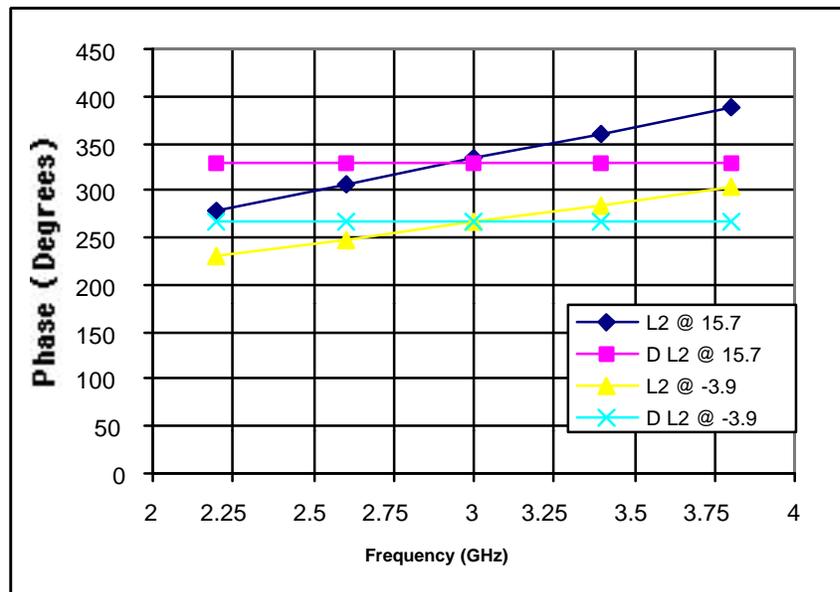


Figure 2: -3.8 MeV leg phasing. L2 represents leg2 (the -3.8 MeV leg), DL2 is the phase after including the delay. The phase vs frequency curves are shown for beam at 15.7 MeV and at -3.8 MeV.



¹ R. Shafer, "Notation for Loop Pickup Geometrical Sensitivity", Pbar 232, 1982.