SINGLE PASS COLLIDER MEMO

CN- 291

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REPLACES CN#

TITLE: SECTOR1-LTR-RTL-SECTOR2 TREATY

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After considerable deliberation, we have determined the location of the linac and damping ring interface. This treaty point serves as a pivot about which the optics for sector one, the Linac-To-Ring lines, Ring-To-Linac lines, and sector two have been designed. The treaty location is at $Z = 98.7532$ m from the beginning of the SLC linac sector one. Our choices of location and beam parameters are consistent with the verbal charter of Ecklund, Fieguth, and others. Figure 1 depicts the girder 1-9 drift region in which the treaty point, bend magnets PBH and HB0, as well as the end of the sector, at $Z = 101.6000$ m, have been clearly marked. Beam properties at the treaty point and after reinjection from the RTLs at the end of sector one are tabulated below.

The Linac - Damping Ring Treaty

$$Z = 98.7532 \text{ m}$$

$$\text{Energy} = 1.210 \text{ GeV}$$

$$\beta_x = \beta_y = 5.000 \text{ m}$$

$$\alpha_x = \alpha_y = 0.000$$

$$\gamma_z = \gamma_y = 0.200 \text{ m}^{-1}$$

$$\gamma_{e-} = 30 \times 10^{-5} \text{ m}^{-1} \text{ rad} \quad \gamma_{e+} = 1000 \times 10^{-5} \text{ m}^{-1} \text{ rad}$$

$$\frac{\Delta E}{E} = \pm 1\%$$

The RTL - Linac Interface

$$Z = 101.6000 \text{ m}$$

$$\text{Energy} = 1.210 \text{ GeV}$$

$$\beta_x = \beta_y = 6.621 \text{ m}$$

$$\alpha_x = \alpha_y = -0.569$$

$$\gamma_z = \gamma_y = 0.200 \text{ m}^{-1}$$

$$\gamma_{e-} = \gamma_{e+} = 3 \times 10^{-5} \text{ m}^{-1} \text{ rad}$$

$$\frac{\Delta E}{E} = \pm 1\%$$

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