

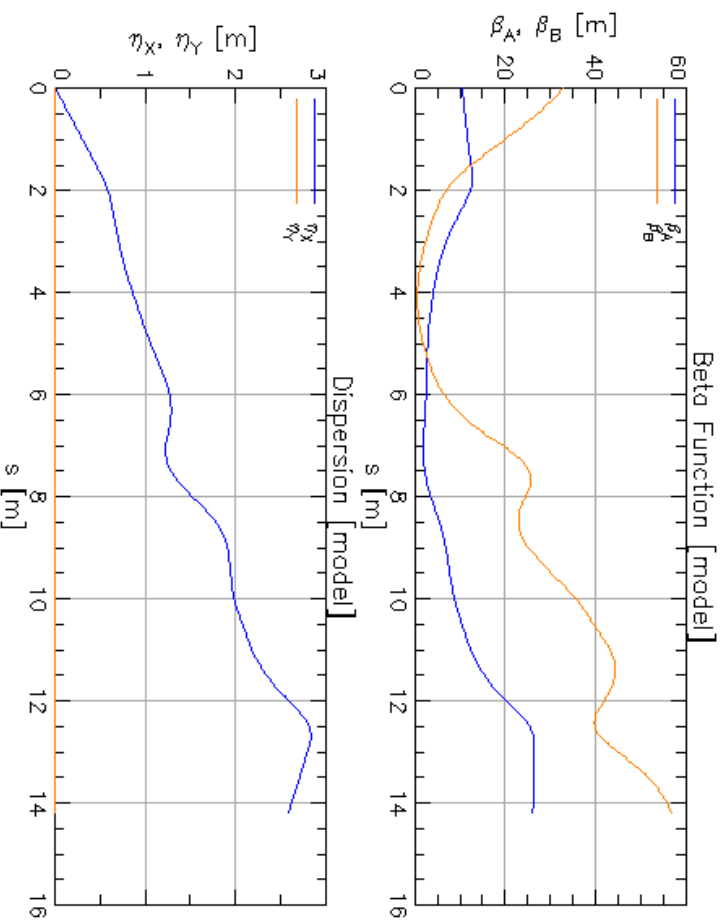
OSC simulation update

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Match MPE's bypass line to CESR

osc_bypass_5.2mm.bmad



$$\Delta\Phi_x = 2.59727562 \text{ (rad)}$$

$$\Delta\Phi_y = 3.04074257 \text{ (rad)}$$

CESR 500MeV lattice

sk_q48w to sk_q48e

$$\Delta\Phi_x = 2.8836276 \text{ (rad)}$$

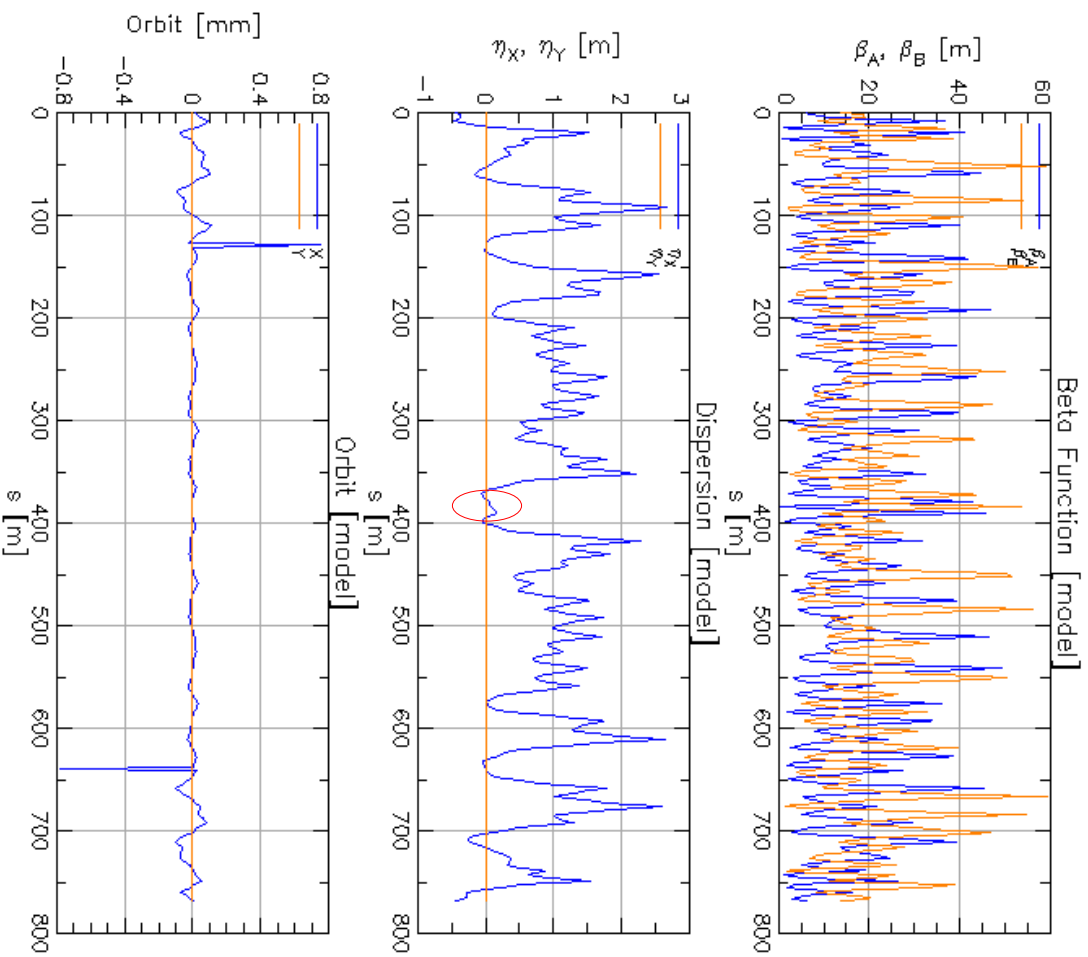
$$\Delta\Phi_y = 0.714776 \text{ (rad)}$$

Procedure:

1. Create a linear lattice: sk_48e to sk_48w
2. Use the Twiss parameters of the end element in the bypass line as the start Twiss of sk_48e.
3. Optimize the linear lattice to match the Twiss parameters at the end of sk_48w to the Twiss parameters at the beginning of bypass line.
4. Insert the bypass line into the ring

Note: in step 3, all quads are allowed to vary except the quads in the bypass line.

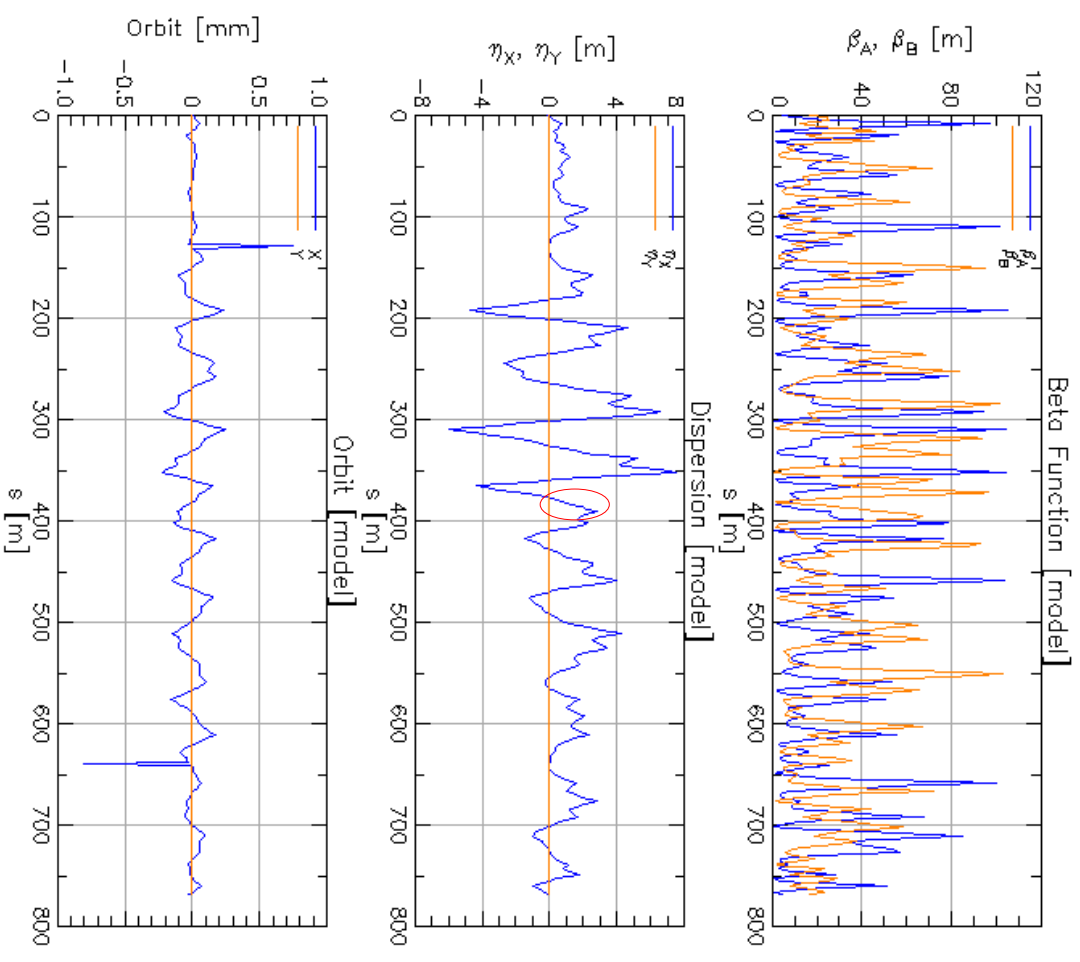
Before insertion



$$Q_x = 14.567$$
$$Q_y = 9.610$$

$$\epsilon_x = 3000\text{pm}$$

After insertion



$$Q_x = 14.322$$
$$Q_y = 10.119$$

$$\epsilon_x = 1000\text{nm}$$