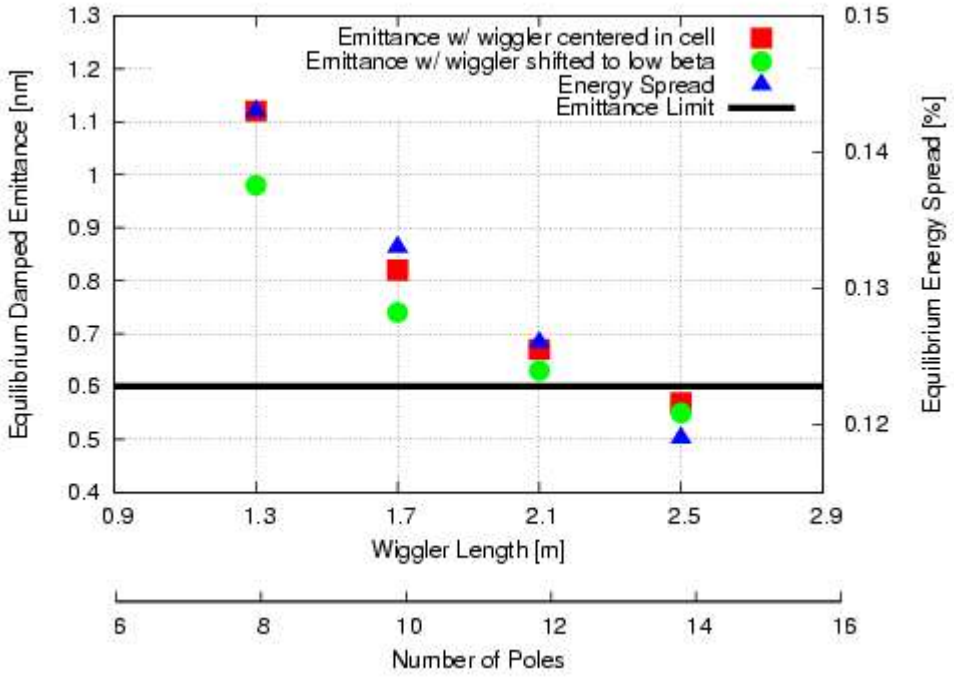
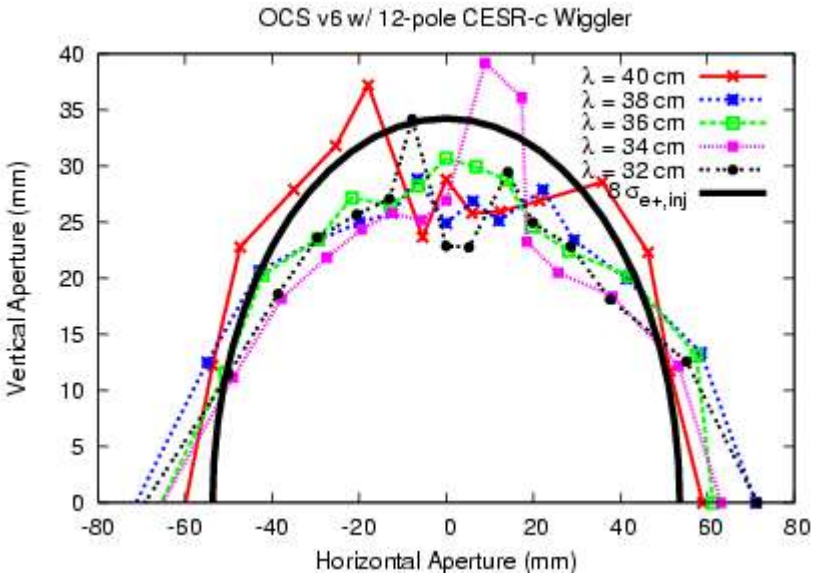
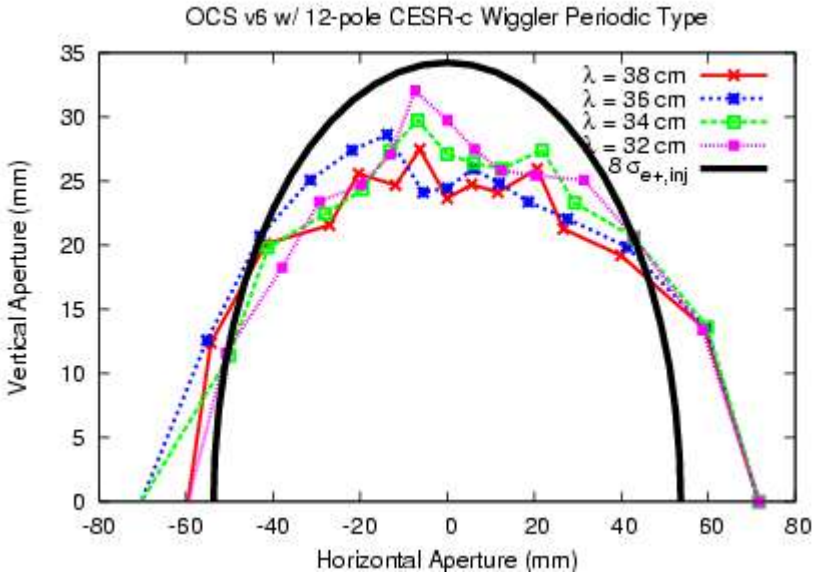


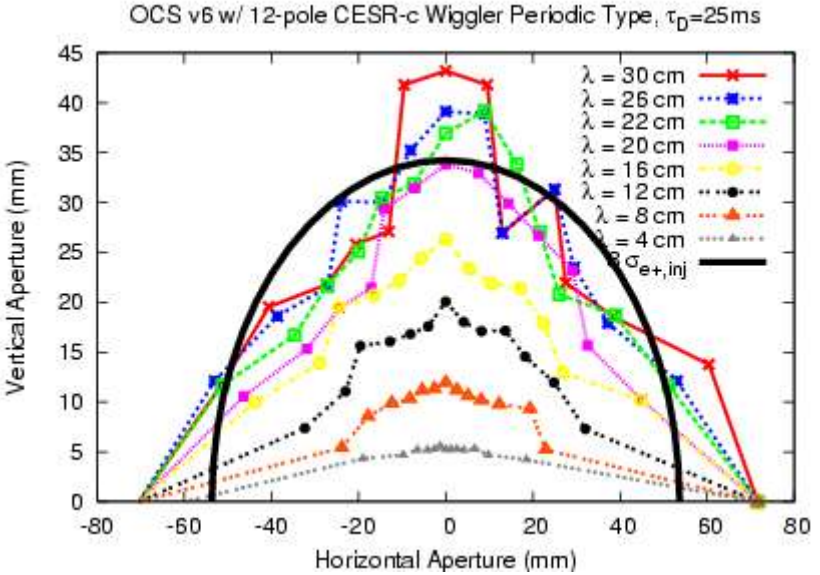
For EPAC, I looked at a fewer number of poles with the B_{peak} increased to keep τ_{damp}=25ms.

After EPAC, I selected a 12 pole wiggler and examined shorter periods.



I switched to period-type wiggler (single-mode/ideal nonlinear) to make varying the period easier and confirmed that dynamic aperture and tune shift results agreed with full nonlinear map-type wiggler.





The dynamic aperture starts to drop below λ=32cm, and the CESR-c pole shape does not accommodate an end-pole below 8cm anyways. Going from fourteen 20cm poles to twelve 16cm poles gives a final length 69% of the original.

R&D Task 3.4.6.A: develop physics design for damping wigglers

Combination of TESLA & CESR-c Wigglers

$N_{poles} = 14$

$\lambda = 40$ cm

$L_{wig} = 2.50$ m

$B_{peak} = 1.65$ T

$W_{pole} = 238$ mm

$G_{pole} = 76$ mm

$I = 92$ A

Optimized Superferric ILC Wiggler

$N_{poles} = 12$

$\lambda = 32$ cm

$L_{wig} = 1.68$ m

$B_{peak} = 1.86$ T

$W_{pole} = 238$ mm

$G_{pole} = 86$ mm

$I = 141$ A *(too high?)*

Nominal Parameter Targets

$\sigma_\delta = 0.15\%$

$\varepsilon_x = 0.60$ nm

$\tau_{damp} = 25.0$ ms

Final Parameter Values

$\sigma_\delta = 0.13\%$

$\varepsilon_x = 0.55$ nm

$\tau_{damp} = 26.4$ ms