

# Longitudinal core emittance for various types of photocathode laser temporal shapes

- 1nC XFEL @ undulator: 5kA, 25um rms  $\rightarrow$  83fs rms  $\rightarrow$   $T=2*\text{rms}=167\text{fs}$   $\rightarrow$   $Q\sim 0.83\text{nC}$
- ASTRA optimization for XFEL PI: initial  $T_{\text{rms}}$   $\rightarrow$  same  $Z_{\text{rms}}@15\text{m}$
- Longitudinal core emittance:  
 $\rightarrow$  projected emittance of center fraction

