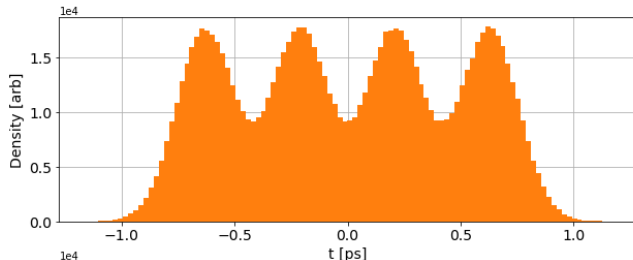


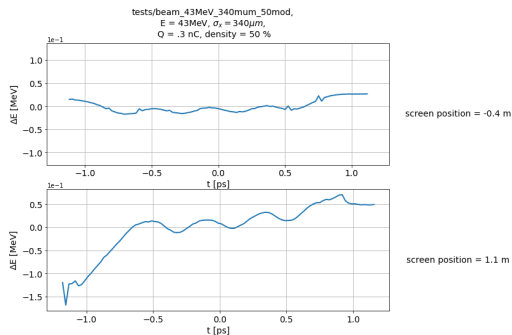
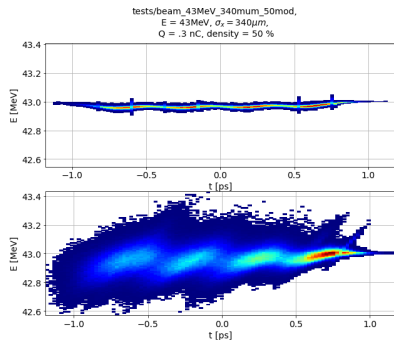
Wiggler Alone

$FWHM_t = .3\text{ps}$	$\lambda = .42\text{ps}$	modulation = 50%
$\sigma_{\perp} = 340,681\mu\text{m}$	$E = 43\text{MeV}$	$Q = .3\text{nC}$
$\beta_{center} = 4,1\text{m}$	$\epsilon = 10\text{mm mrad}$	$\Rightarrow \sigma_{\perp} = \sqrt{\epsilon \cdot \beta} = 3.16, 6.32\text{mm} !!$



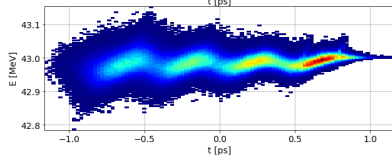
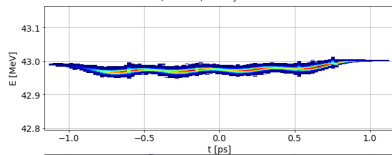
- We said $FWHM = .3$ ps: only true at cathode?
- How low can we go with charge?
- With given emittance and beta-function σ_{\perp} is an order of magnitude larger!

Wiggler Alone

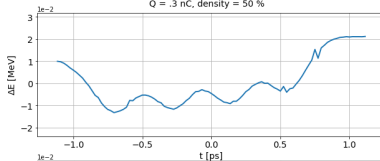


Wiggler Alone

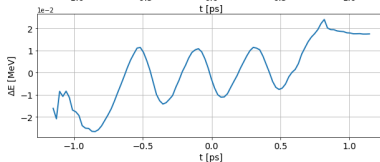
tests/beam_43MeV_681um_50mod,
E = 43MeV, $\sigma_x = 681\mu\text{m}$,
Q = .3 nC, density = 50 %



tests/beam_43MeV_681um_50mod,
E = 43MeV, $\sigma_x = 681\mu\text{m}$,
Q = .3 nC, density = 50 %

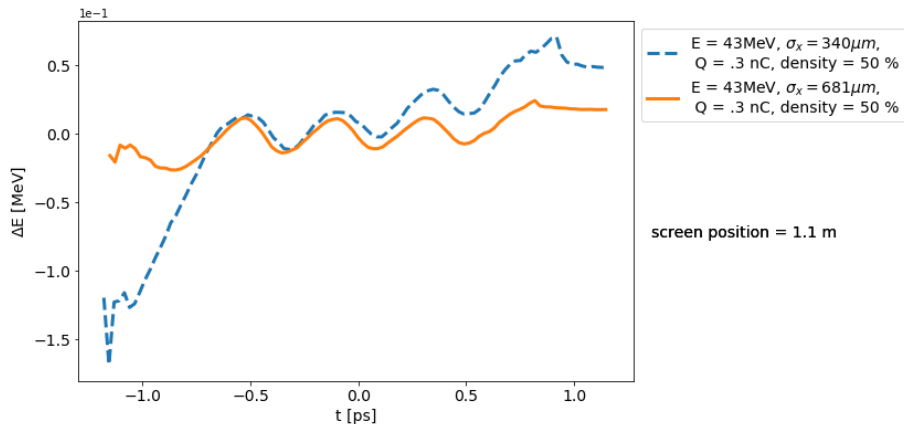


screen position = -0.4 m



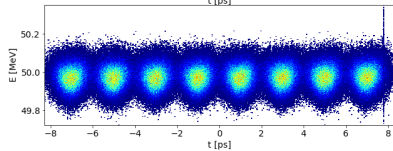
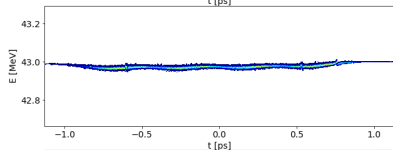
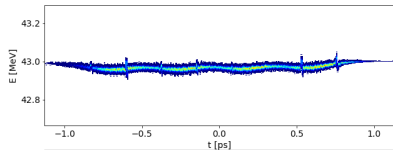
screen position = 1.1 m

Wiggler Alone

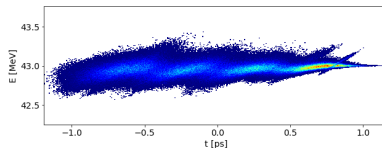


Wiggler Alone

screen at -0.4 m

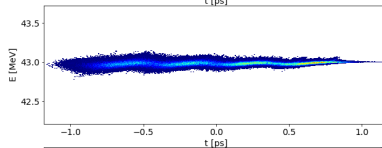


screen at 0.88 m



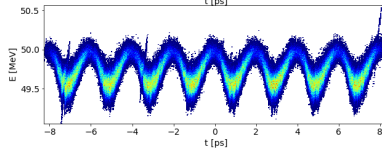
$E = 43 \text{ MeV}$, $\sigma_x = 340 \mu\text{m}$,
 $Q = .3 \text{ nC}$, density = 50 %

screen position = 1.1 m



$E = 43 \text{ MeV}$, $\sigma_x = 681 \mu\text{m}$,
 $Q = .3 \text{ nC}$, density = 50 %

screen position = 1.1 m

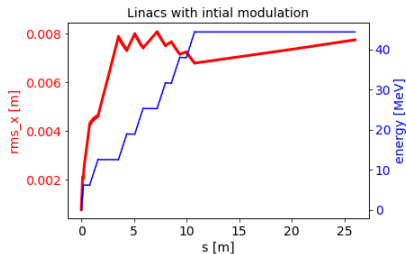
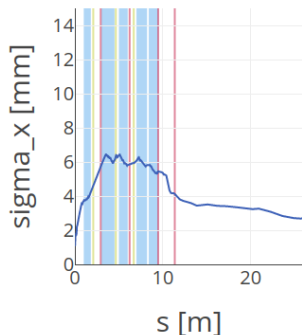


Last week example
 $E = 50 \text{ MeV}$, $\sigma_x = .1 \text{ mm}$,
 $Q = 1 \text{ nC}$, density = 87 %
FWHM = 1 ps, $\lambda = 2 \text{ ps}$

screen position = 0.88 m

Full Beamline

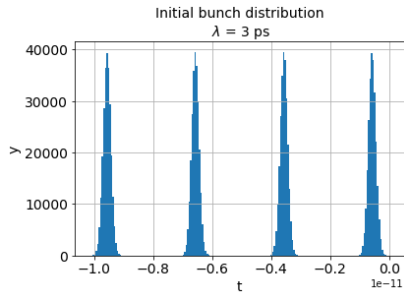
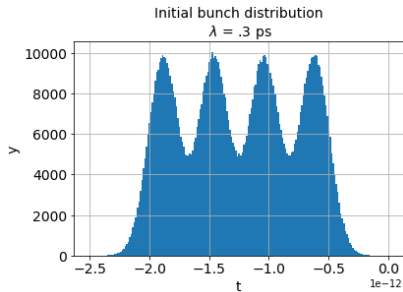
$FWHM_t = .3\text{ps}$	$\lambda = .42, 3\text{ps}$	modulation = 100%
$\sigma_{\perp} = 1.5\text{mm}$	$V_{RF} = 15.6\text{MV}$	$Q = 1\text{nC}$



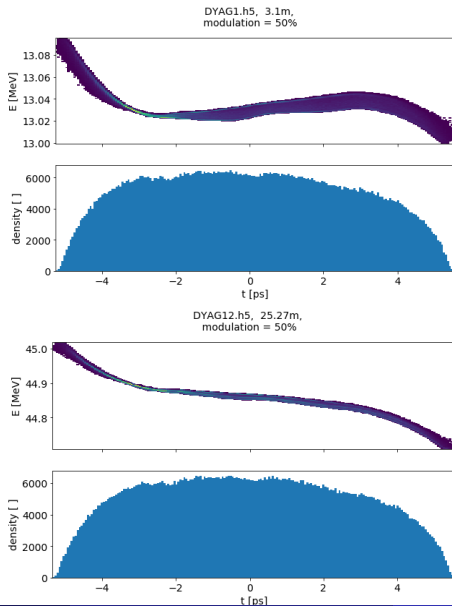
A.Albà, 2020-02-14

- Can modulation be maintained up to wiggler?
- If bunch length will change so much, it needs to be included as a parameter in surrogate model.

Full Beamline



Full Beamline



Full Beamline

