

Density Step

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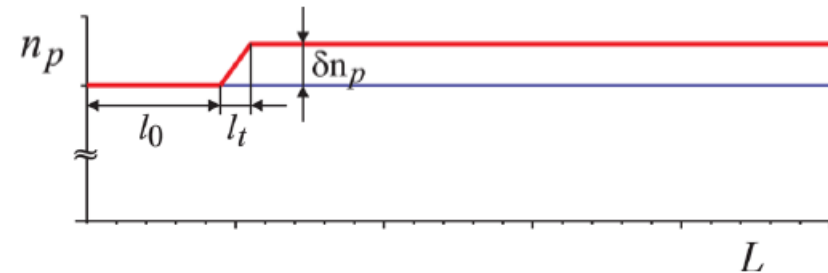
Group meeting 23/08/2019

Bunch and plasma parameters

Parameter	Value
Bunch σ_z	10 cm
Bunch σ_r	0.017 cm
Bunch populat.	3×10^{11} protons
Bunch energy	400 GeV
Plasma length	10 m
Plasma density	7×10^{14} electrons
Window length	30 cm

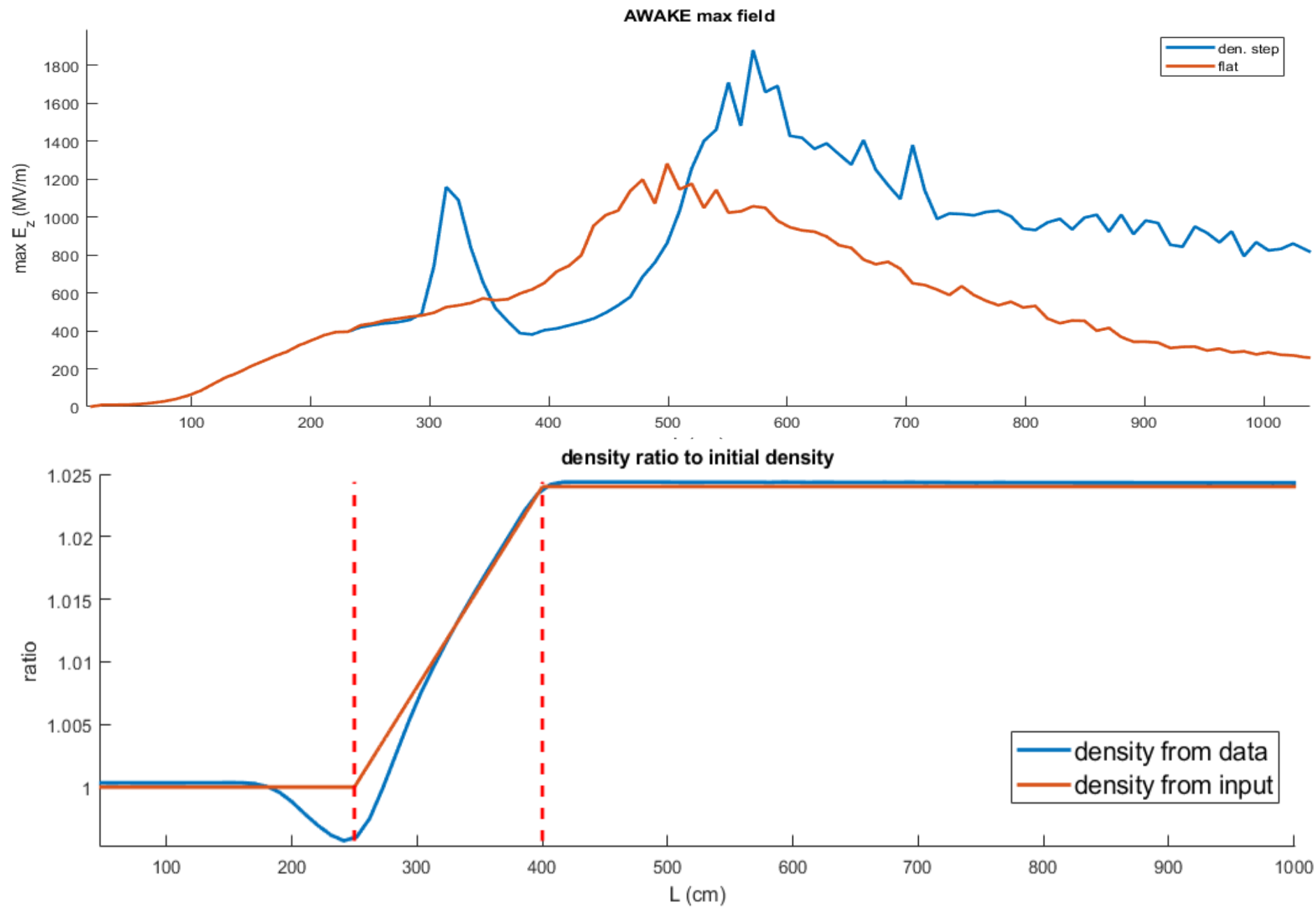
AWAKE R1
axisymmetric 2D

Parameter	Value
z resolution	8 μm (37350)
r resolution	0.32 μm (500)

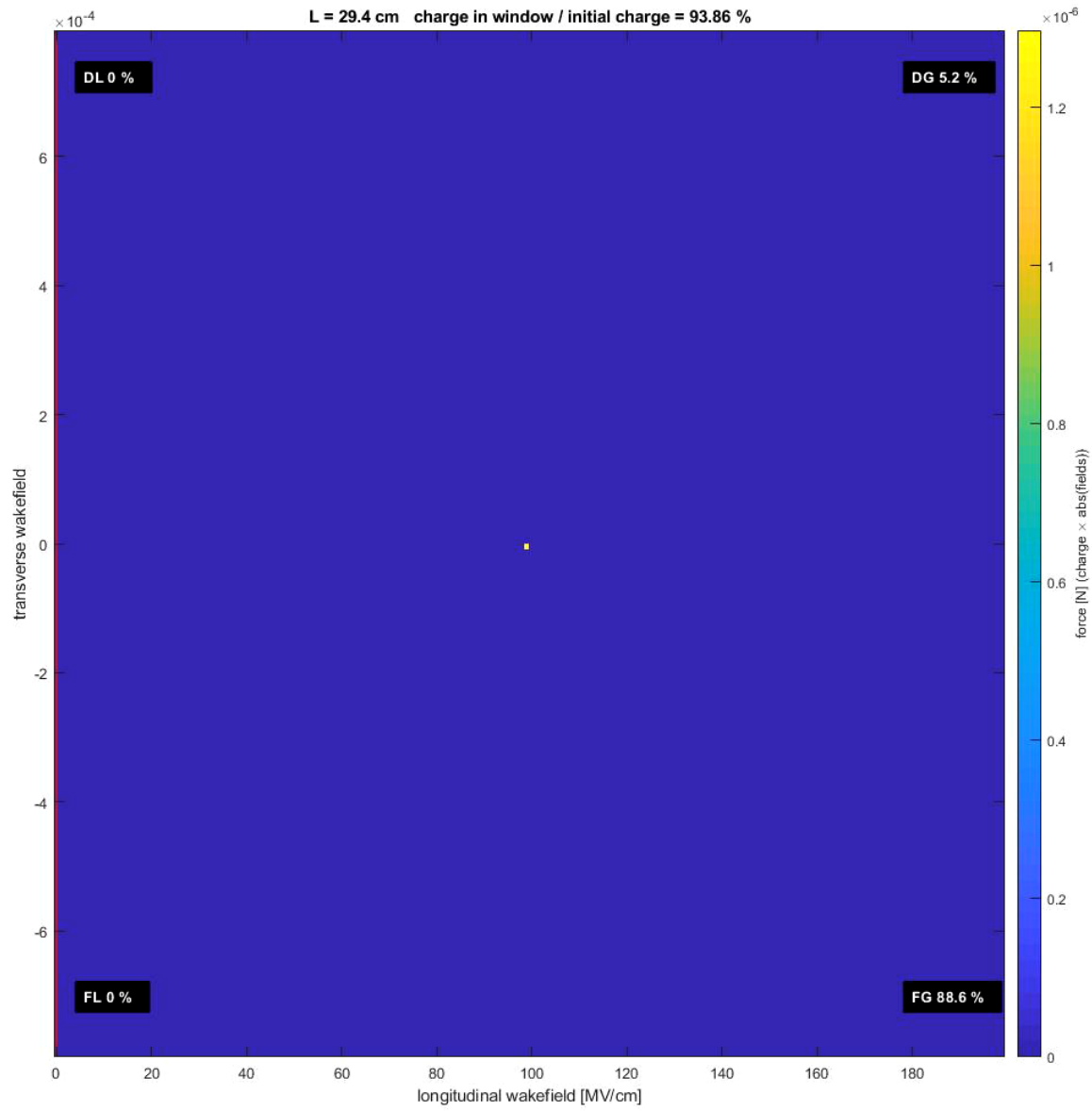


Parameter	PS	SPS-LHC
δn_p (%)	2.2	2.4
l_0 (m)	1	2.5
l_t (m)	3	1.5

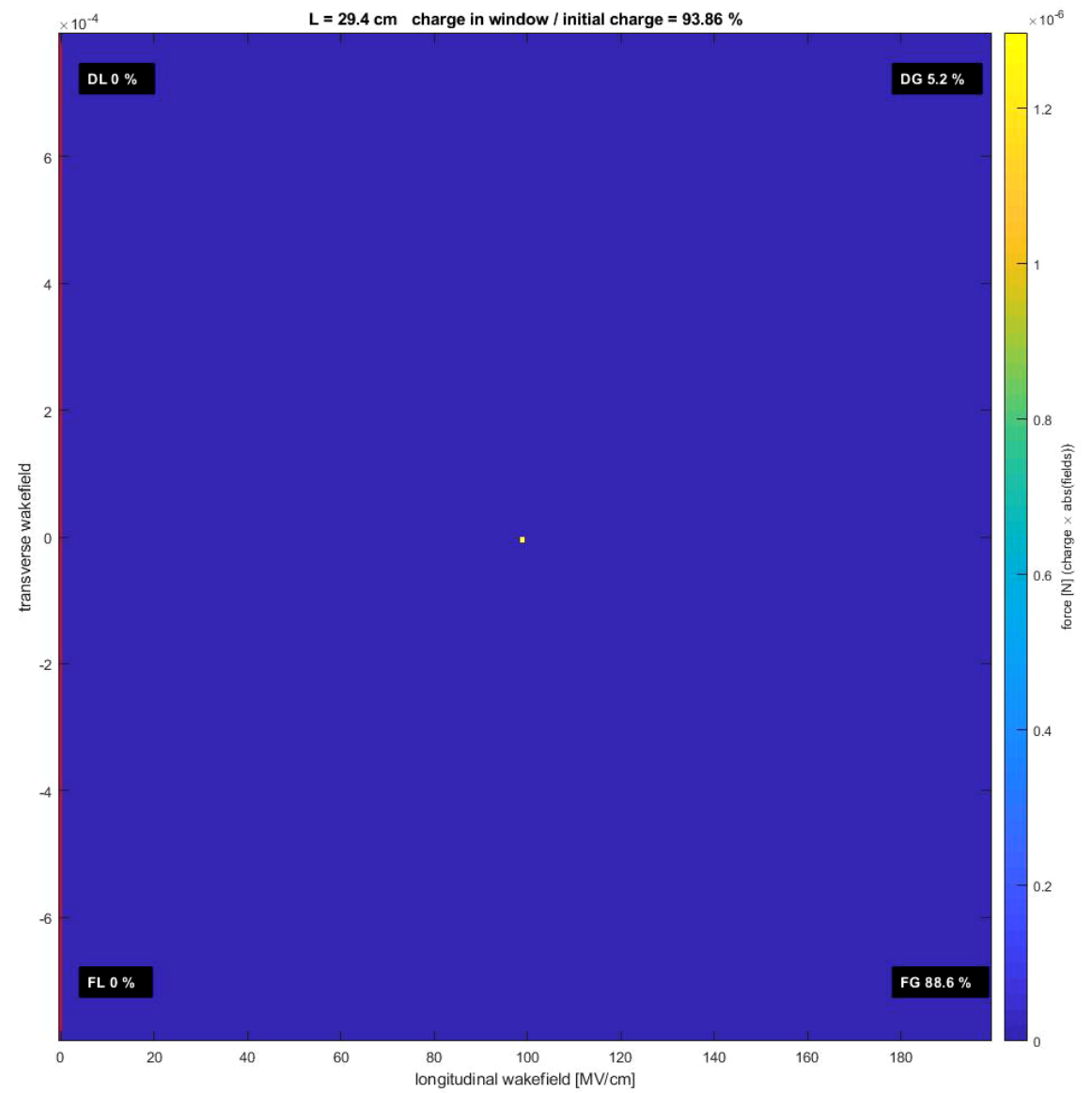
Preliminary Osiris results



Movies



density step



flat

Next

- Ask the experts (Mariana) about the decrease in the density profile.
- Detailed plots beam-fields to complement movies and understand what happens to the bunches during the density step.
- Simulate latest input for the density step.
- Optimize parameters for AWAKE with simulations.