

Long-range wakefield in booster linac

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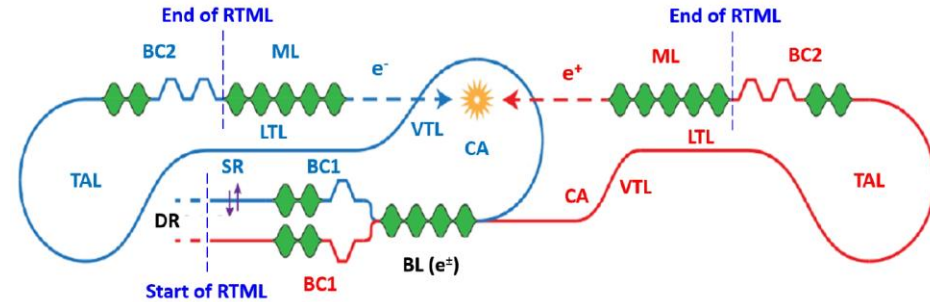
For discussion only

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Structure parameters

- CLIC L-band parameters

Parameter	Unit	BC1
Structure name		CLIC L-band
RF frequency	GHz	1.999
Structure length	m	1.5
Number of cells		30
Phase advance per cell	°	120
Working RF phase	°	90
First iris radius	mm	20
Last iris radius	mm	14
First iris thickness	mm	8
Last iris thickness	mm	8



Used in **BC1 & booster linac (BL)**

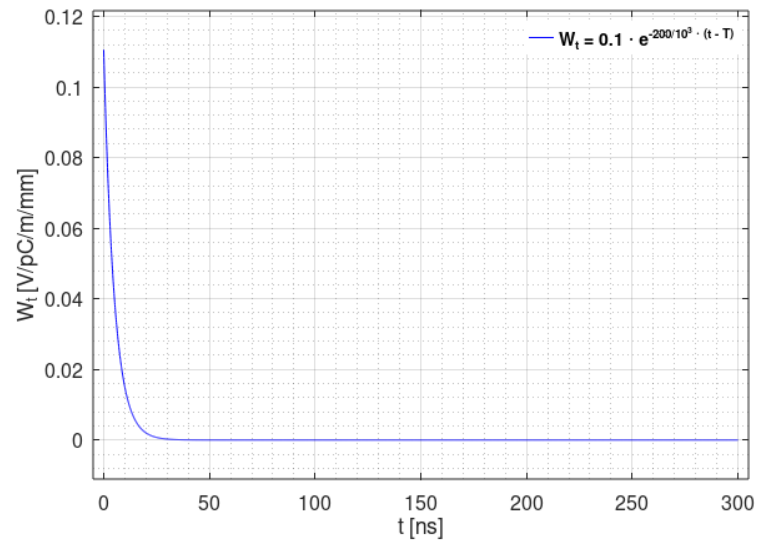
- BL lattice

- 8 structures per FODO cell
- Distance between quadrupoles: 7.5 m
- 272 structures. $G = 15.089$ MV/m

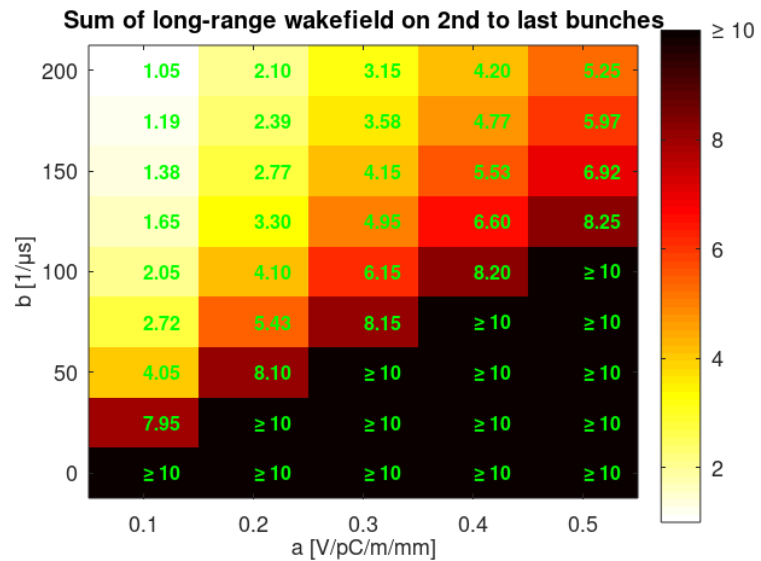
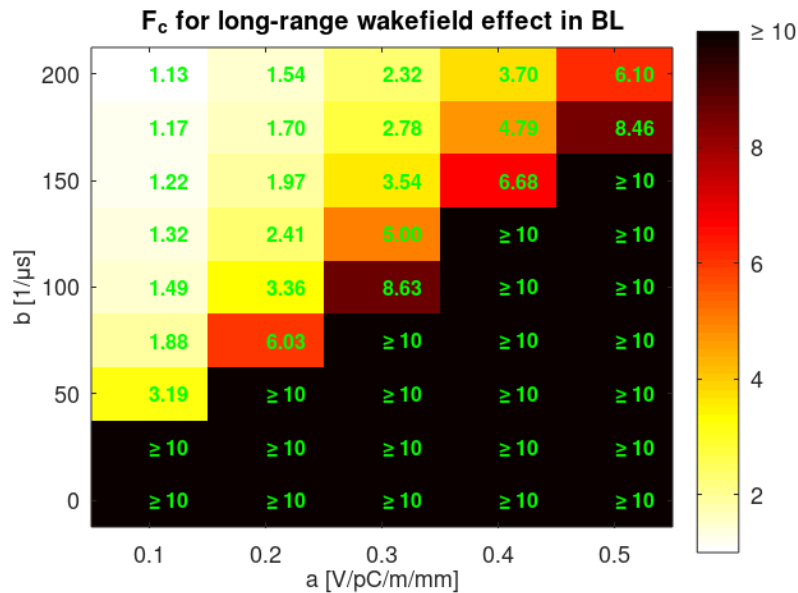
Wakefield parameter scan

- Formula:

- $W_t = a \cdot \exp(-b/1e3 \cdot (t-T))$



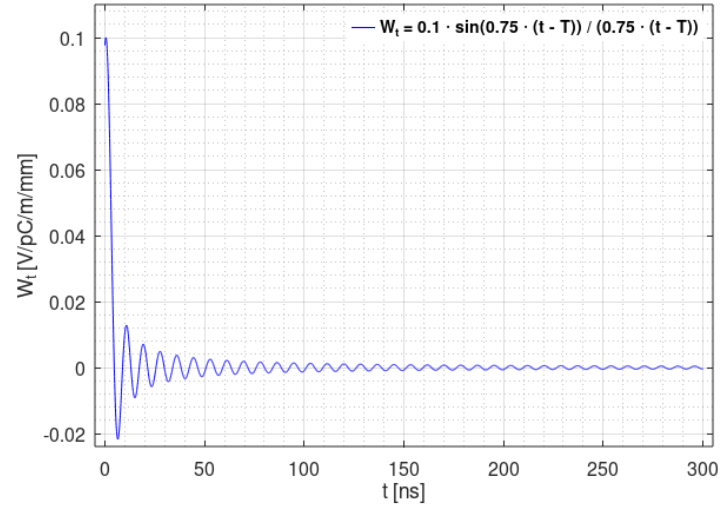
$a = 0.1$
 $b = 200$



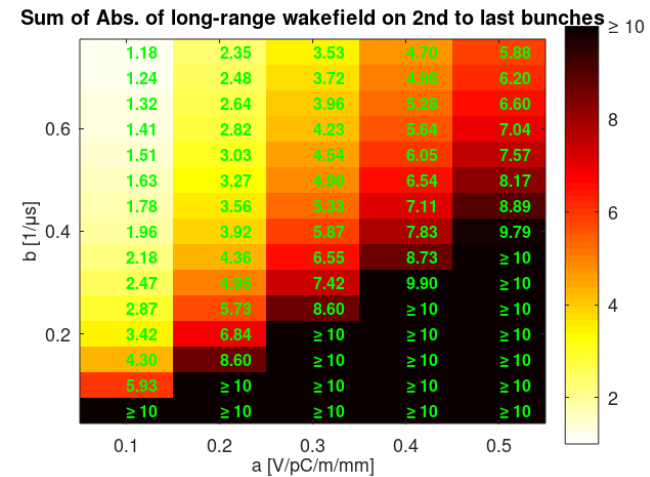
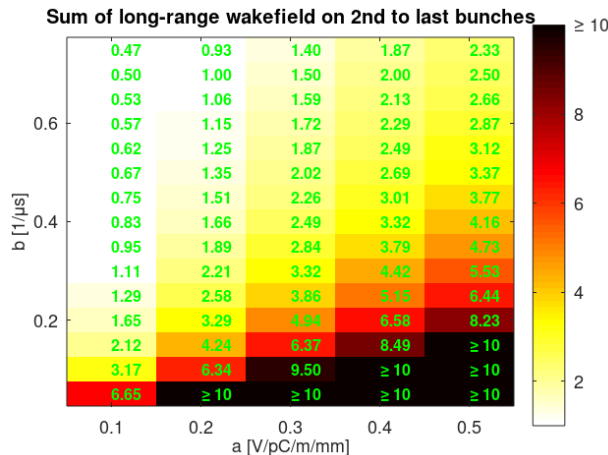
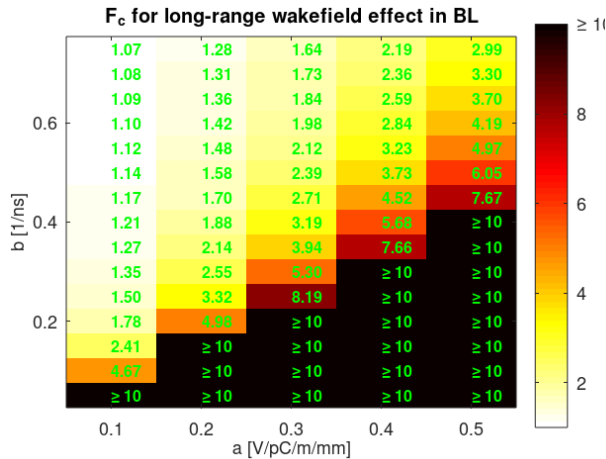
Wakefield parameter scan

- Formula:

- $W_t = a \cdot \sin(b \cdot (t - T)) / (b \cdot (t - T))$



$a = 0.1$
 $b = 0.75$



BBA test summary (very very preliminary)

- $a_0 = 10$ mm: might work depending on iris design. Quite risky
- $a_0 = 11$ mm: seems to work. **Should be OK**
- $a_0 = 12$ mm: seems to work. Should be OK
- $a_0 = 13$ mm: seems to work. Should be OK
- ...
- $a_0 = 17$ mm: works