Capture Simulation Update

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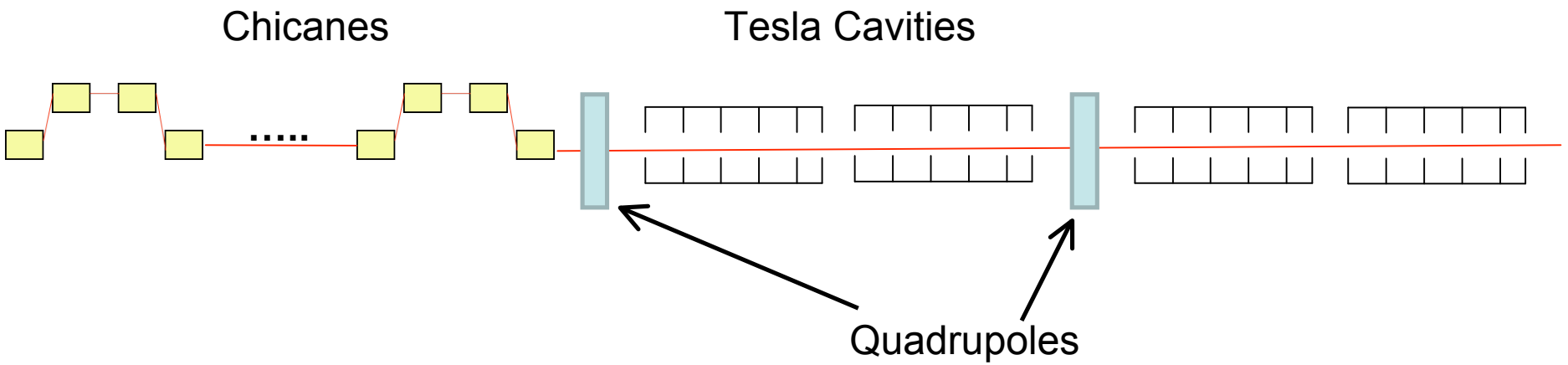
OPTIMIZATION

Stacking simulations performed by F. Zimmermann showed that in order to have efficient stacking a small energy spread is needed ($\sigma_E/E \sim 10^{-4}$).

In order to have a smaller energy spread it's possible:

- To reduce the bunch length at the beginning of the LINAC.
- To insert an Energy Compressor at 5 GeV. DONE

Design of the Energy Compressor



Beam ellipse in the longitudinal phase space (z,E)

Type	N. e^+	ε_x π mm mrad	ε_y π mm mrad	ε_z π cm MeV	σ_z cm	σ_E MeV	σ_x cm	σ_y cm
1.8 / 5 5 GeV n	$6.60\ 10^7$	1.46	0.90	21.48	1.26	17.03	0.58	0.35
1.8 / 5 5 GeV o	$5.91\ 10^7$	1.06	0.85	17.83	1. 11	16.14	0.54	0.65
1.8 / 5 5 GeV p	$6.32\ 10^7$	1.29	0.87	8.27	0.51	16.22	0.28	0.21

1. e+ in (5000 ± 2) MeV = 6.5 % e+ in (5000 ± 3) MeV = 9.5 %
2. e+ in (5000 ± 2) MeV = 10.7 % e+ in (5000 ± 3) MeV = 13.9 %
3. e+ in (5000 ± 2) MeV = 13.3 % e+ in (5000 ± 3) MeV = 19.8 %