Fermilab

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Last SSR2 CM Fault
Linac Lattice Retuning

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Accelerator Physics Meeting

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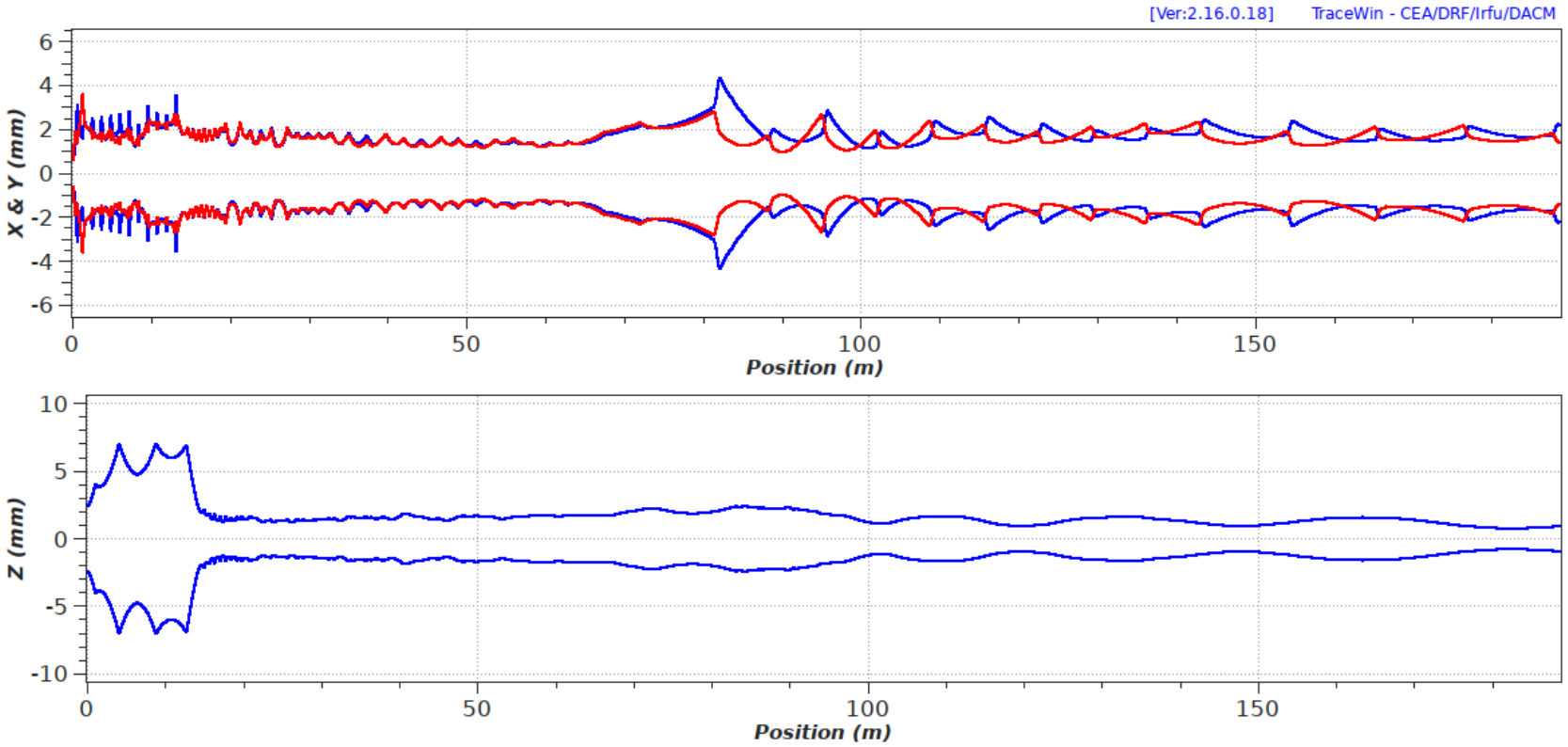
Retuning Strategy

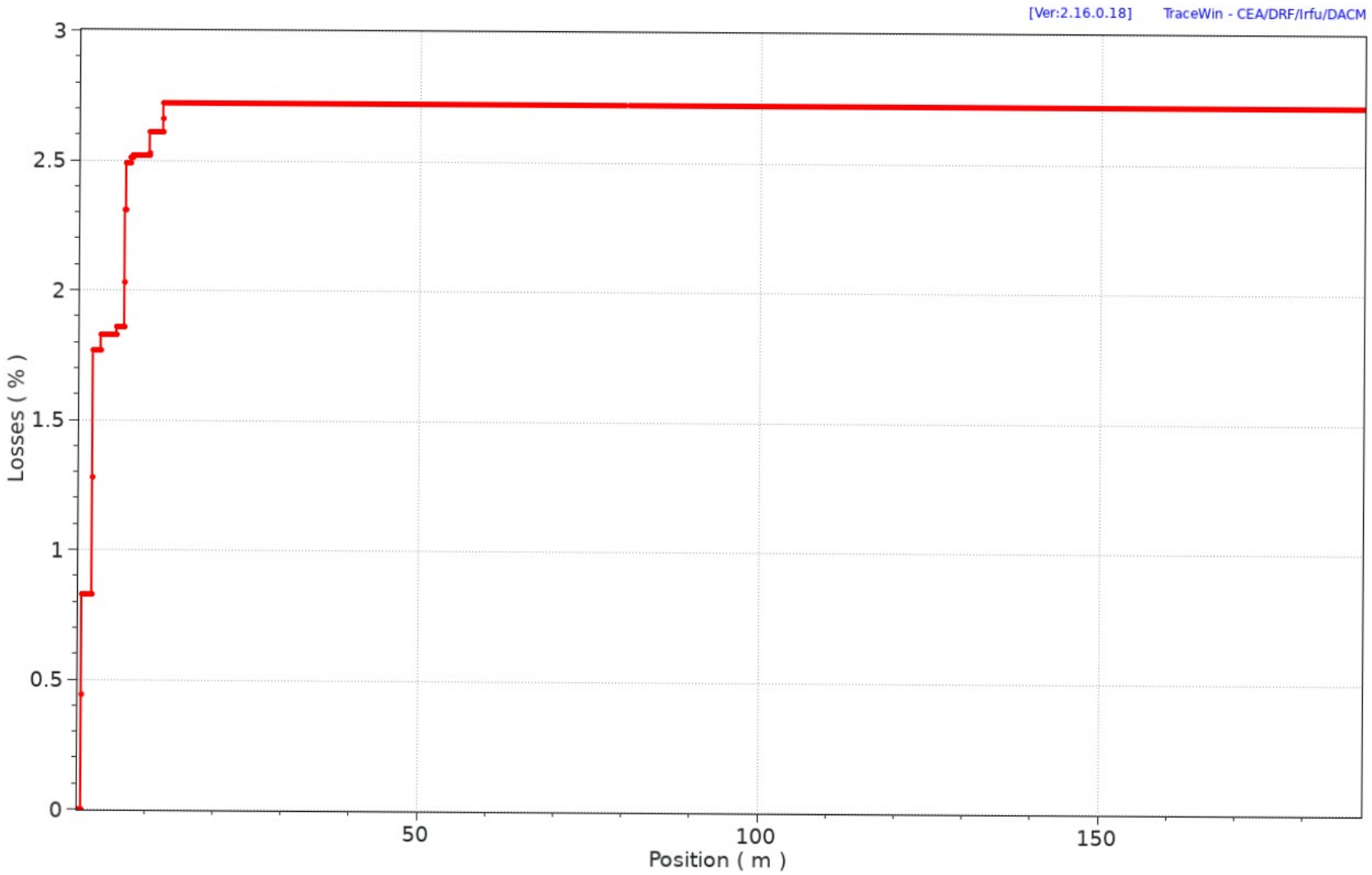
- Loosing an entire CM causes a major perturbation causing the beta functions to increase quadratically over a significant distance. The transverse perturbation is the most significant.

- Adjust Field and Phase in multiple cavities of the upstream SSR2 module and 2 downstream LB650 CM. Match unperturbed longitudinal lattice functions at the downstream end of LB650 CM2. Then obtain tranverse match at the same location by adjusting LB650 section (4) quads.

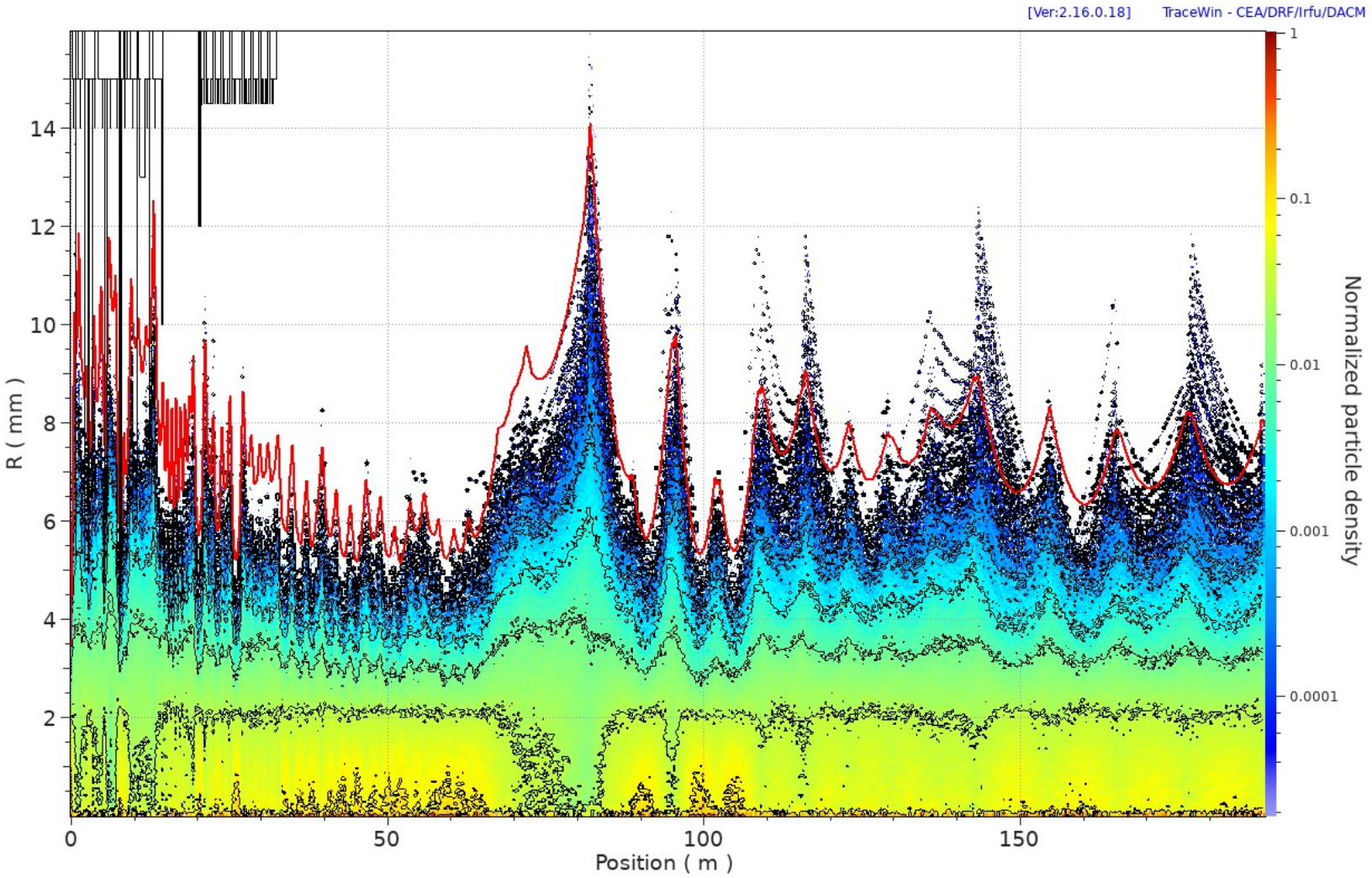
Retuned Lattice Envelope
Partran Mode



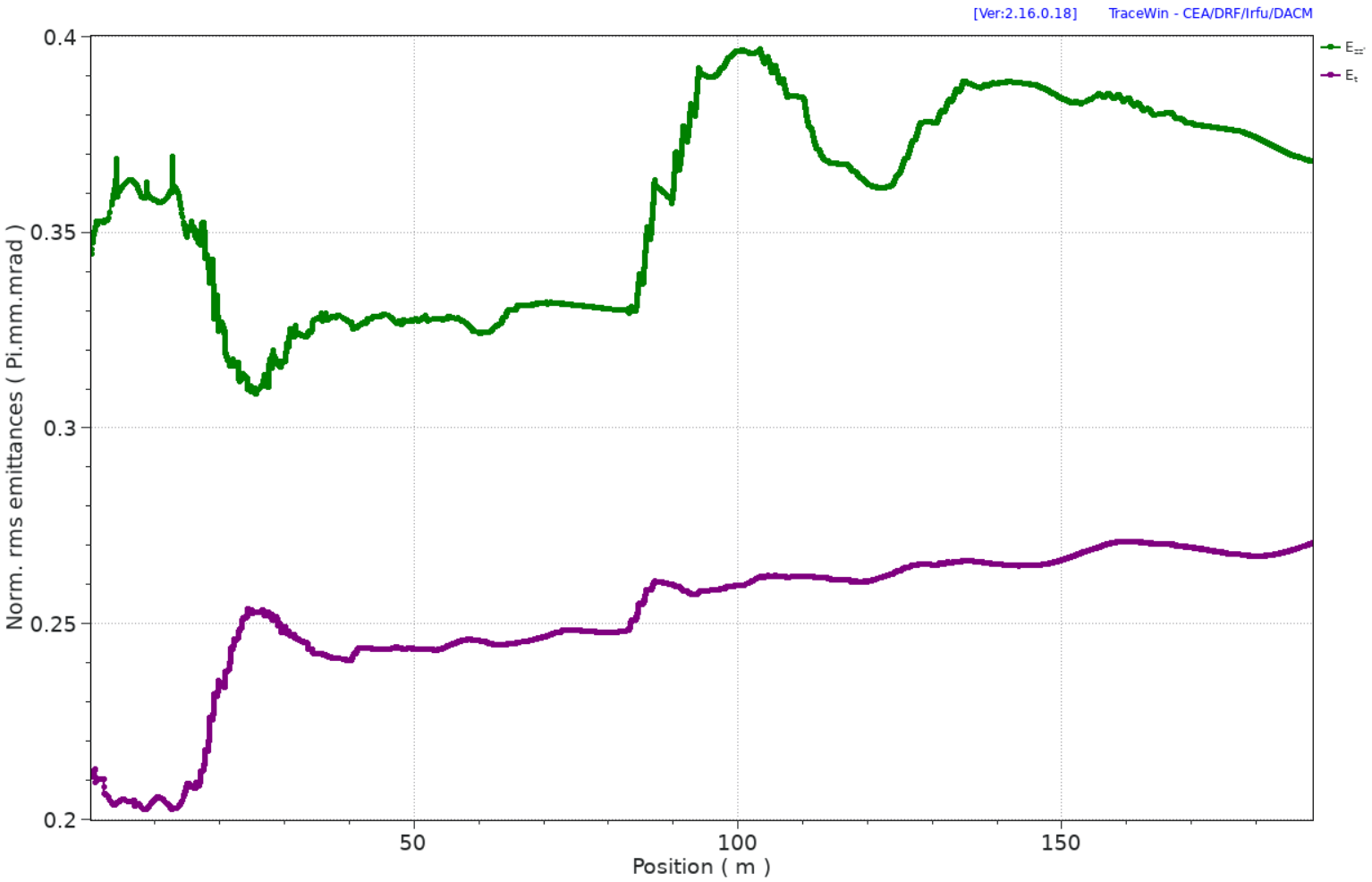
Losses


[Ver:2.16.0.18]
TraceWin - CEA/DRF/Irfu/DACM
Losses (%)
Position (m)
0
0.5
1
1.5
2
2.5
3
50
100
150

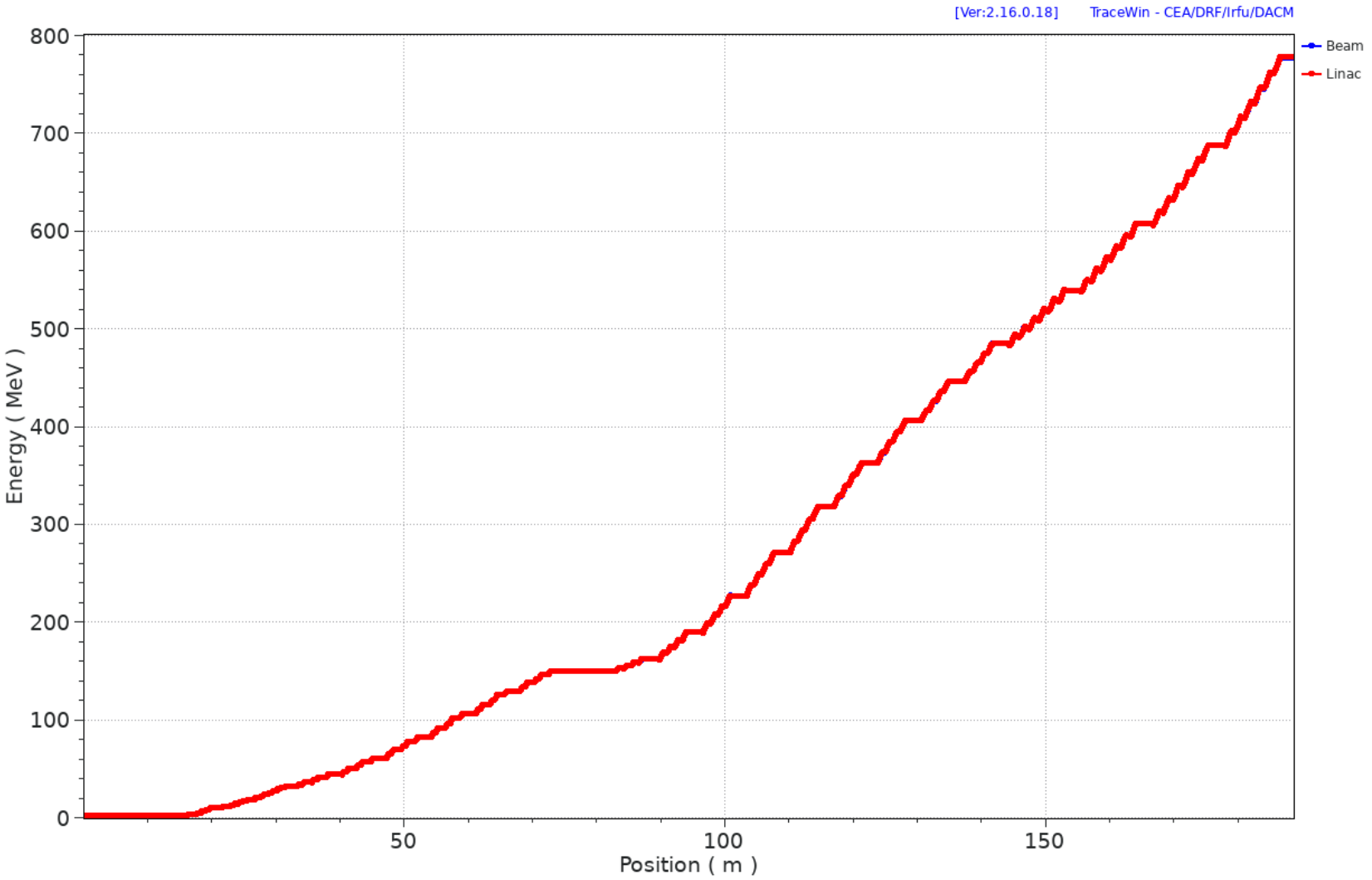
Density


[Ver:2.16.0.18]
TraceWin - CEA/DRF/Irfu/DACM
R (mm)
Position (m)
Normalized particle density
1
0.1
0.01
0.001
0.0001
0
50
100
150
2
4
6
8
10
12
14

Emittances


[Ver:2.16.0.18]
TraceWin - CEA/DRF/Irfu/DACM
0.4
0.35
0.3
0.25
0.2
Norm. rms emittances (Pi.mm.mrad)
50
100
150
Position (m)

Energy


[Ver:2.16.0.18]
TraceWin - CEA/DRF/Irfu/DACM
Beam
Linac
Energy (MeV)
Position (m)
0
100
200
300
400
500
600
700
800
50
100
150