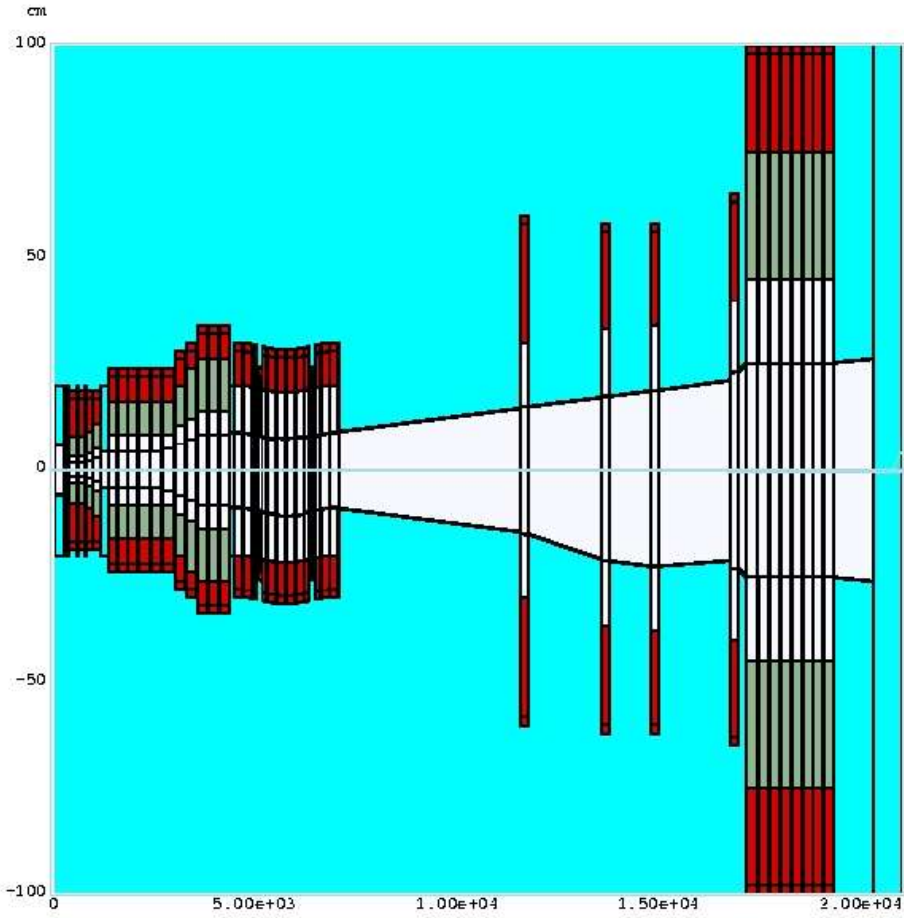
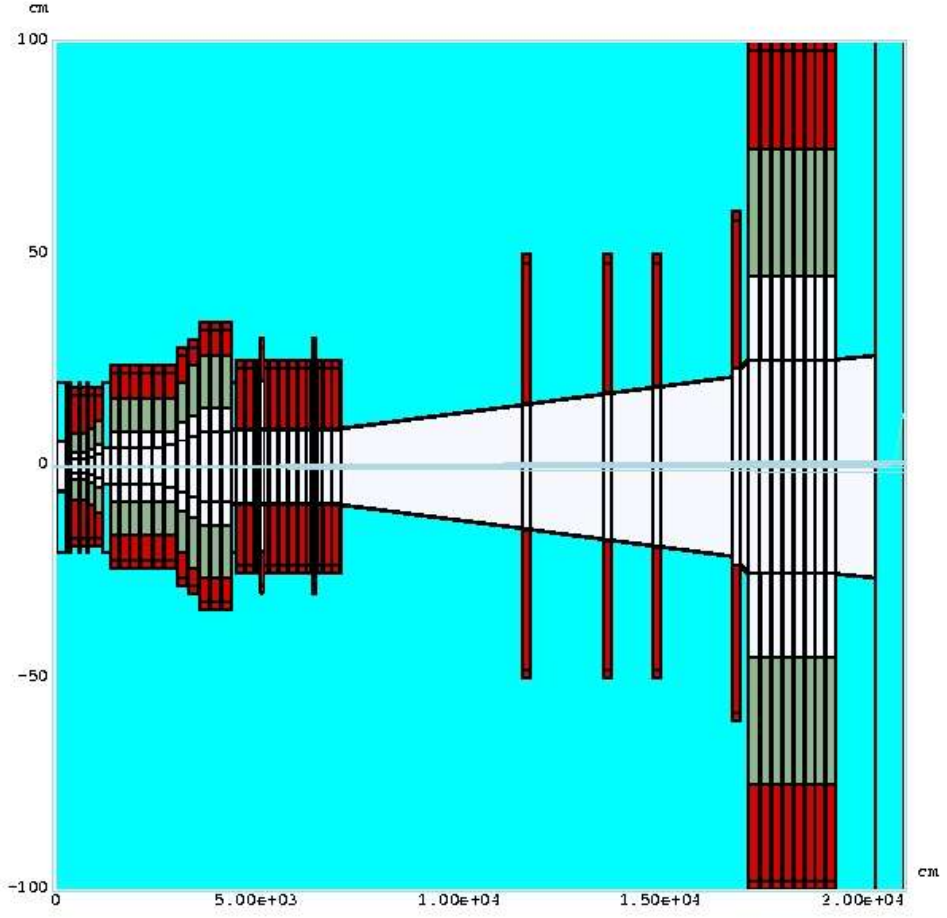
20 mrad Extraction Line: Photons

250 GeV, high luminosity option, 0 and 120 nm beam displacements
No contribution from beamstrahlung photons

Elevation view

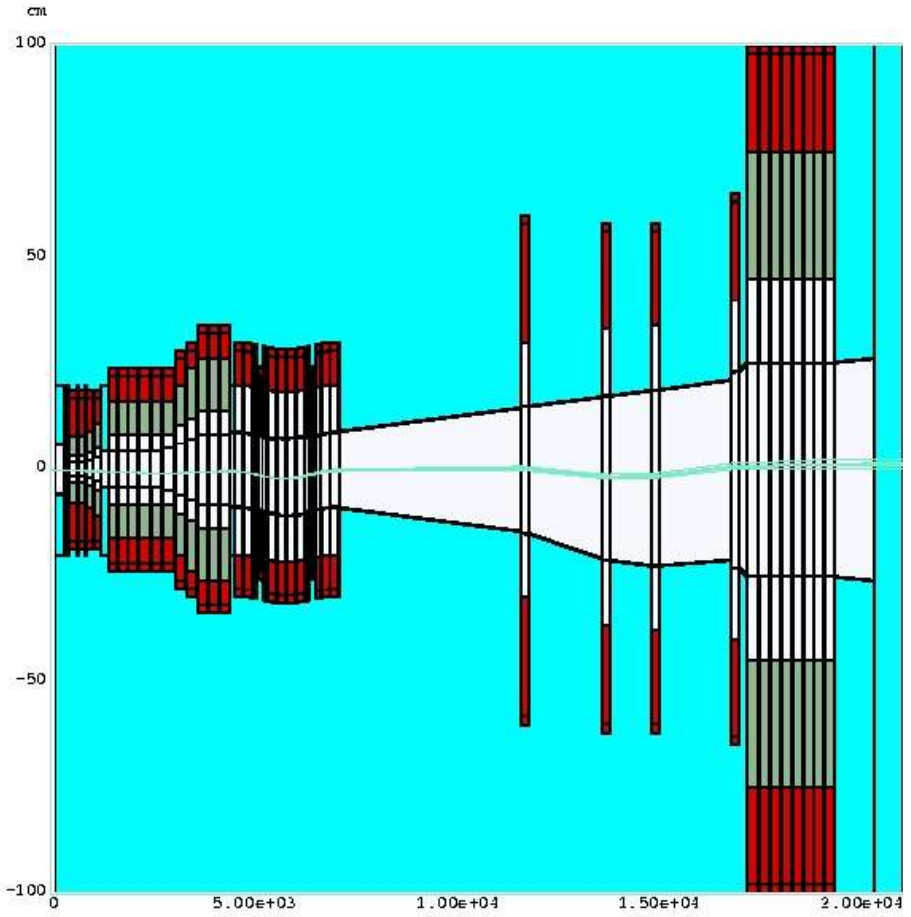


Horizontal view

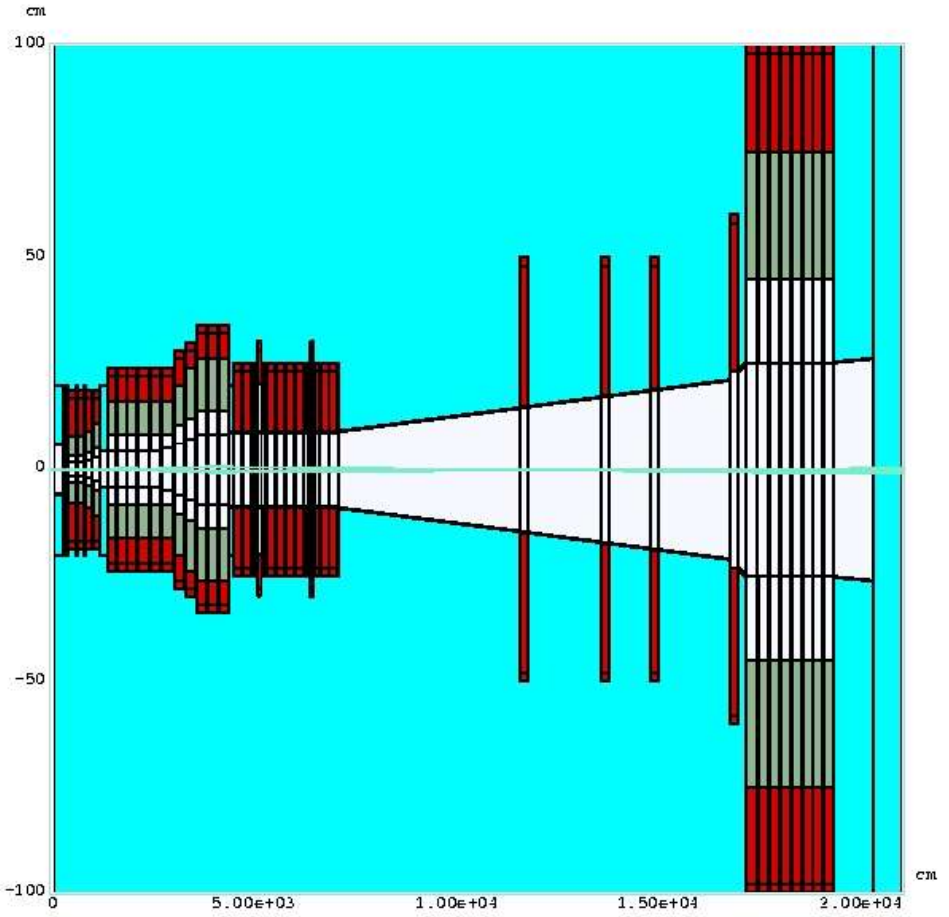


20 mrad Extraction Line: Disrupted Beam

Elevation view, Eth = 100 MeV

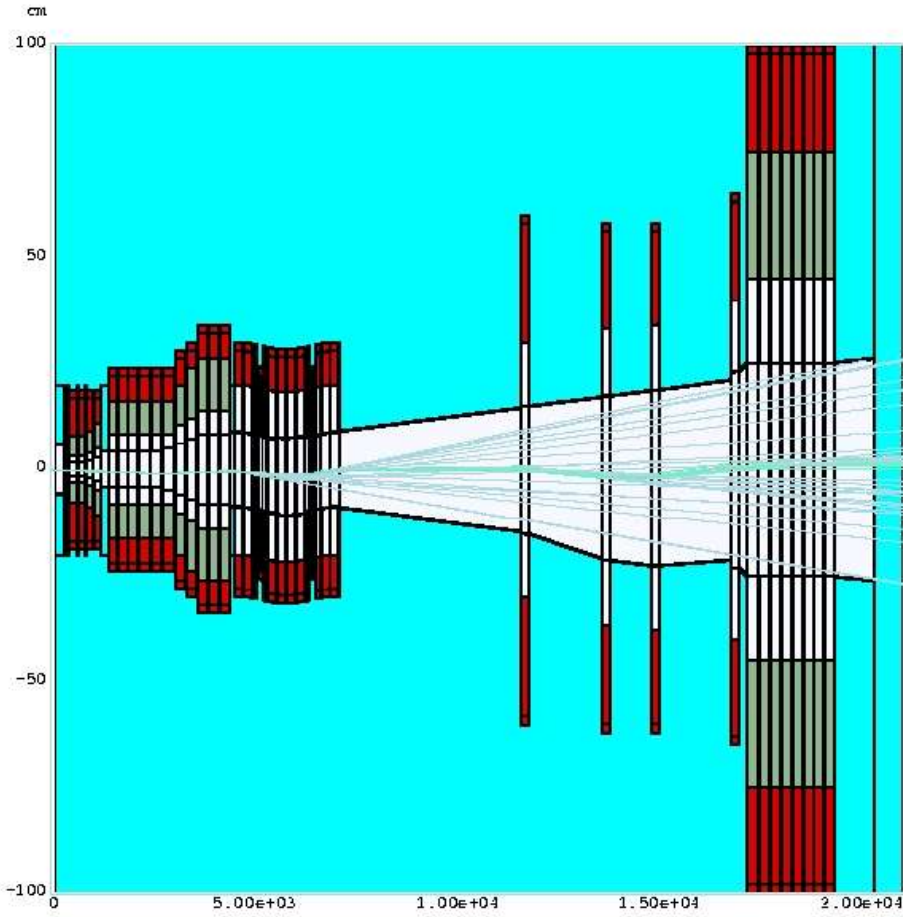


Horizontal view, Eth = 100 MeV

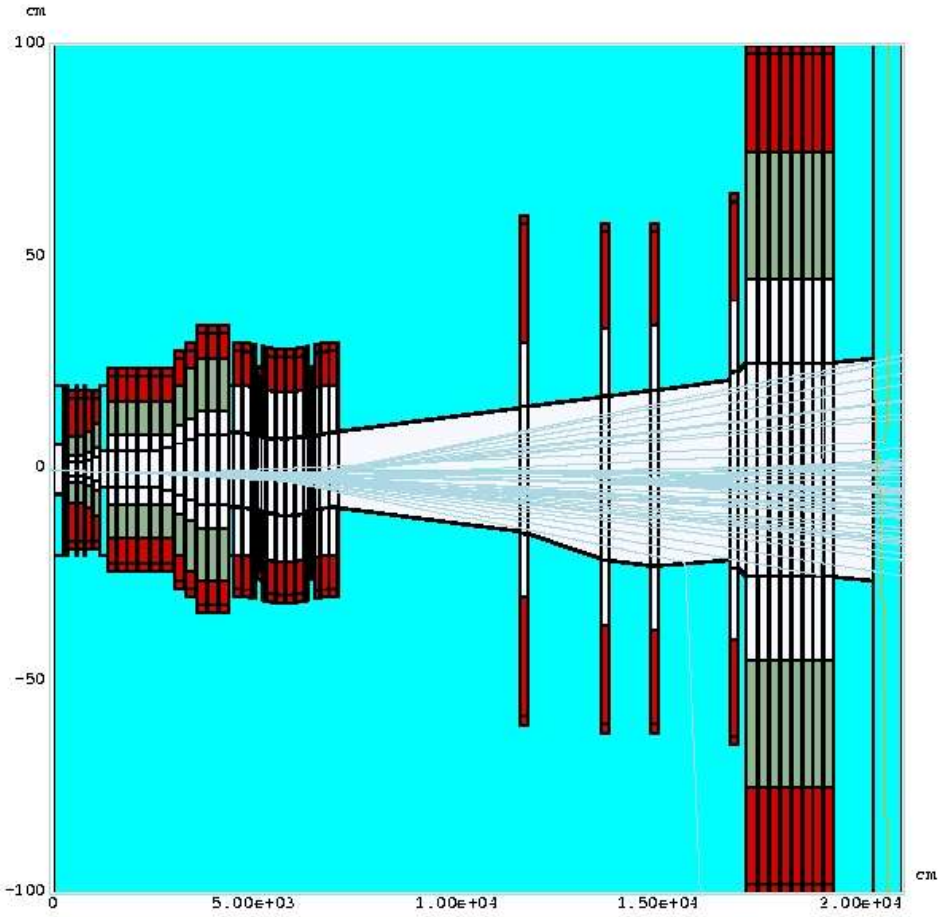


20 mrad Extraction Line: Disrupted Beam

Elevation view, Eth = 20 MeV



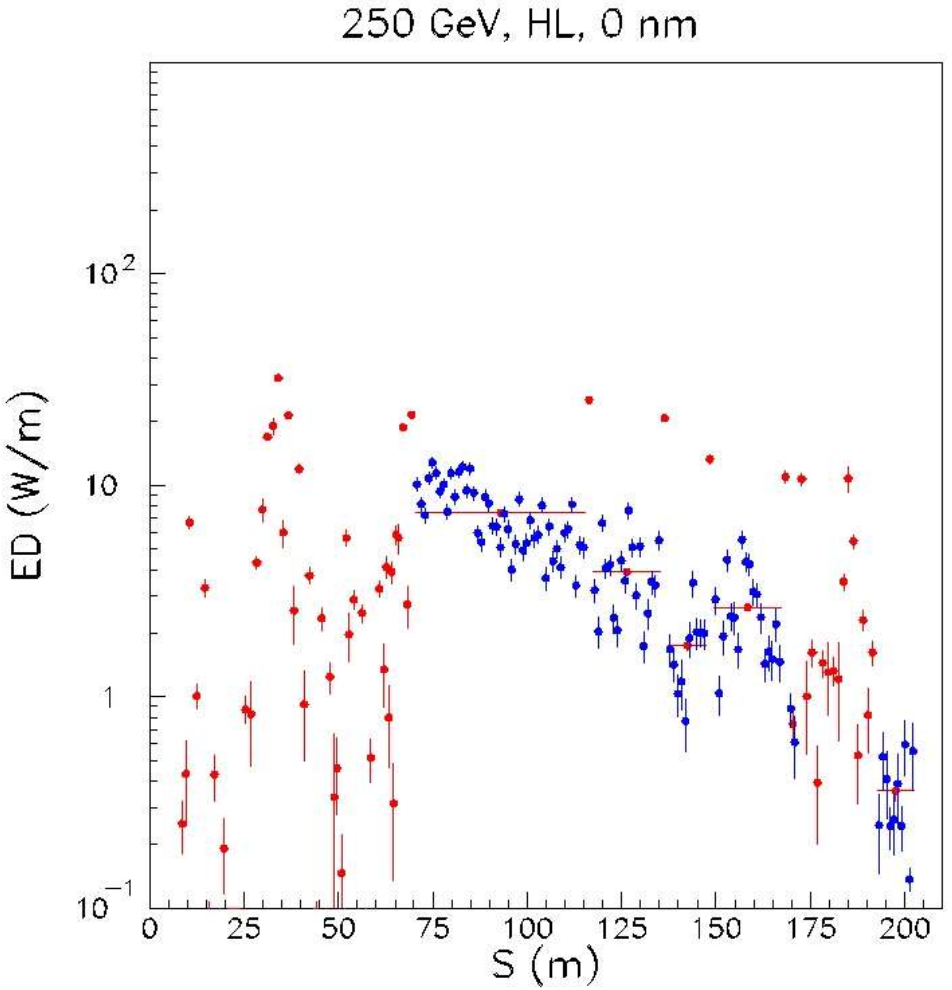
Elevation view, Eth = 0.1 MeV

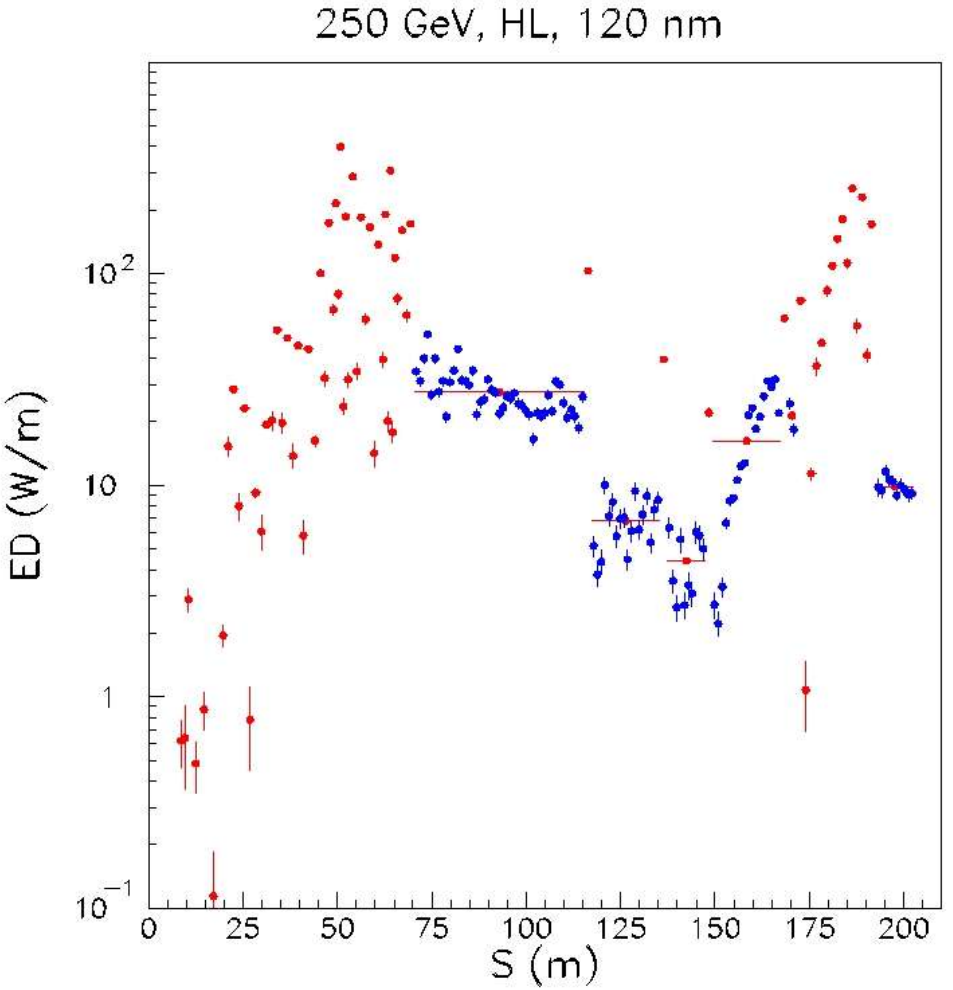


20 mrad Extraction Line: Disrupted Beam

Total energy deposited in elements

ED is similar to the beam loss rate in STRUCT

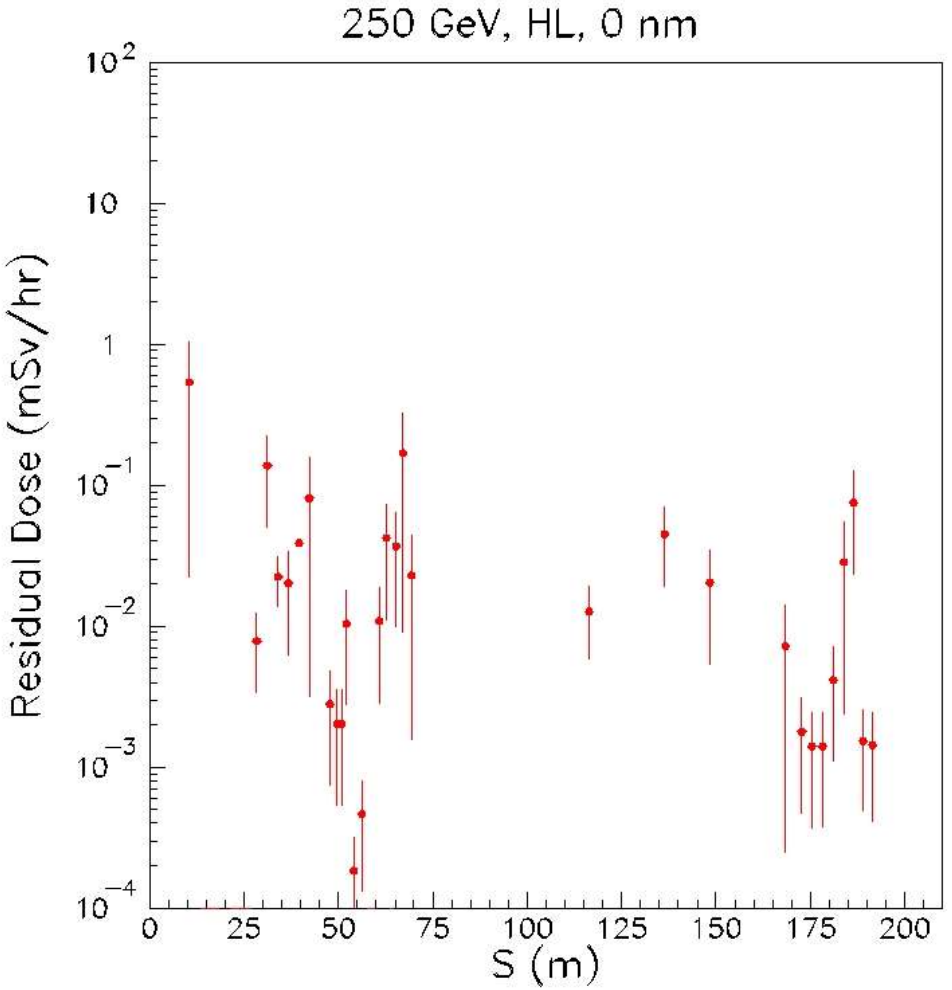


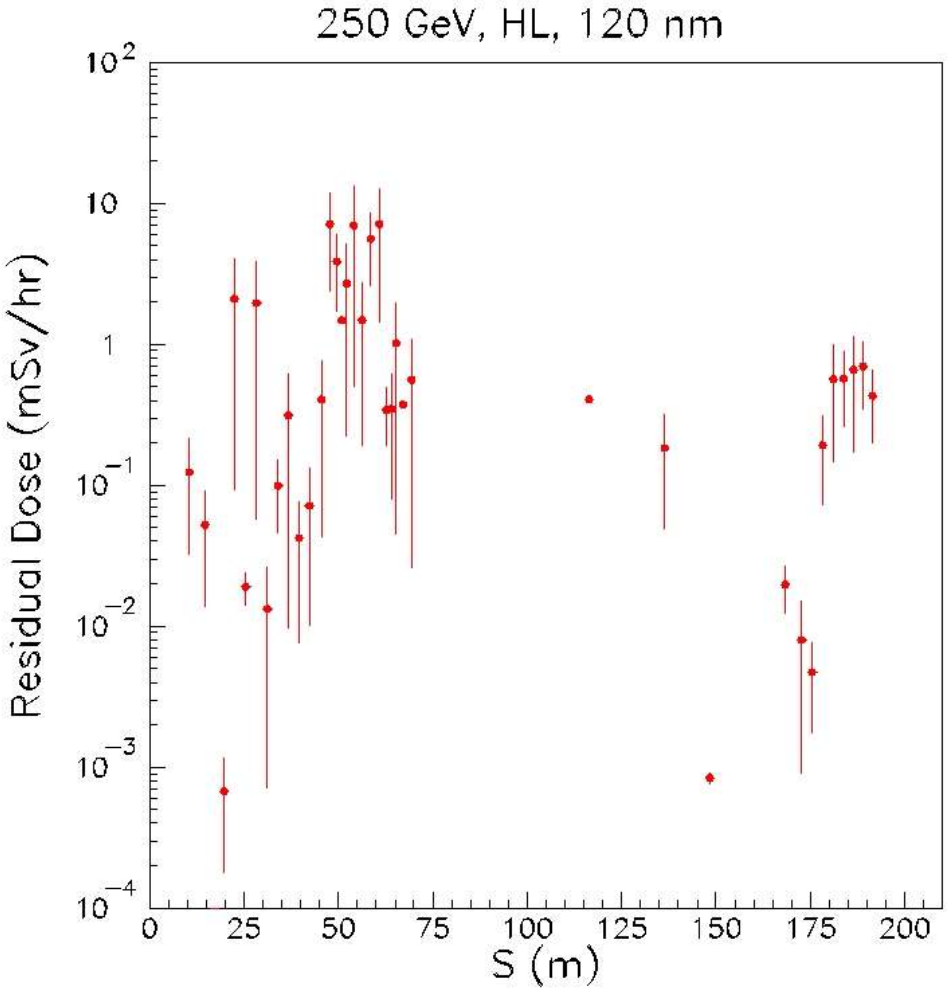


20 mrad Extraction Line: Disrupted Beam

Residual activation of elements

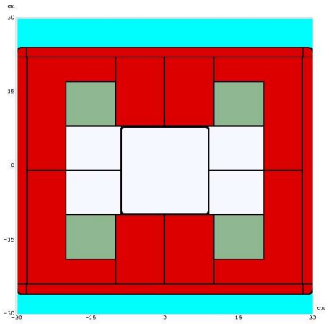
Desirable dose on contact < 1 mSv/hr





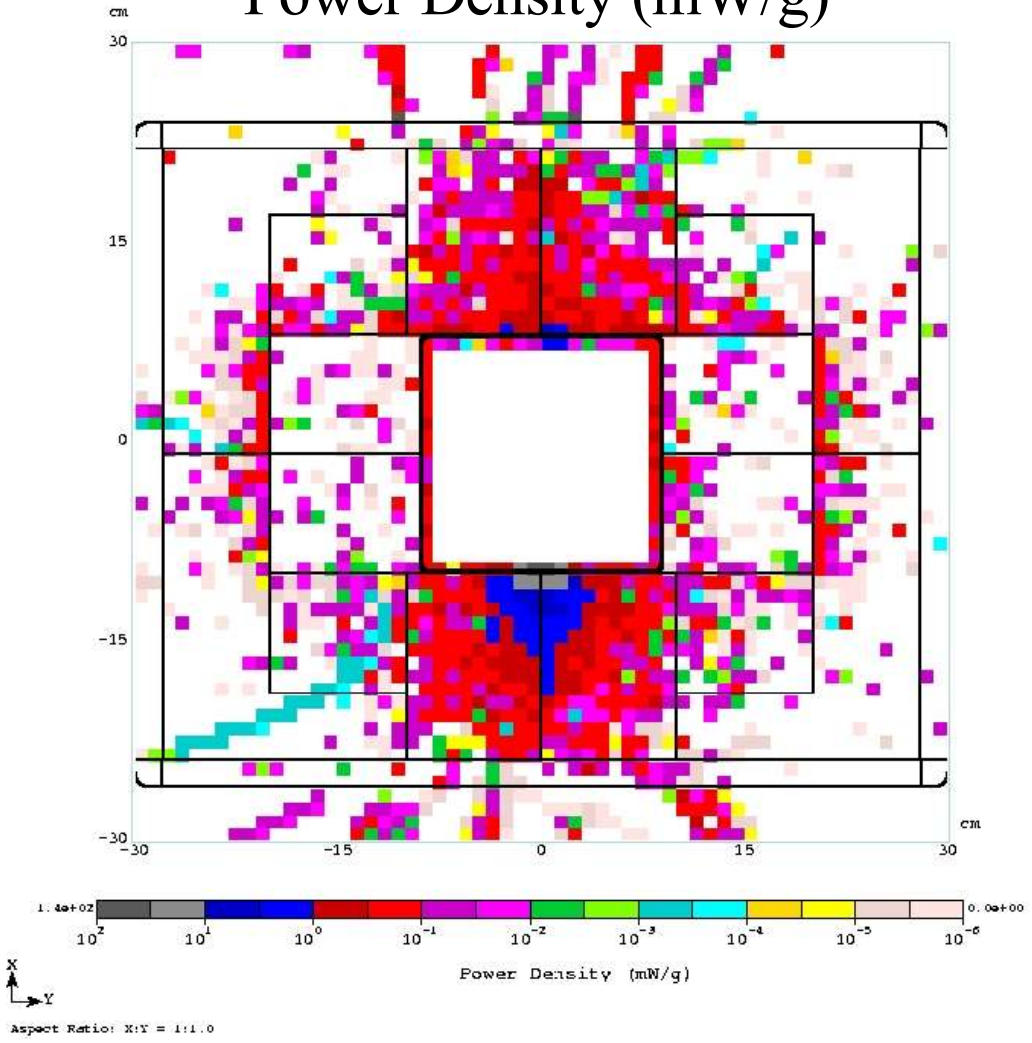
20 mrad Extraction Line: Disrupted Beam

Dynamic heat load in one of hot kickers for 120 nm

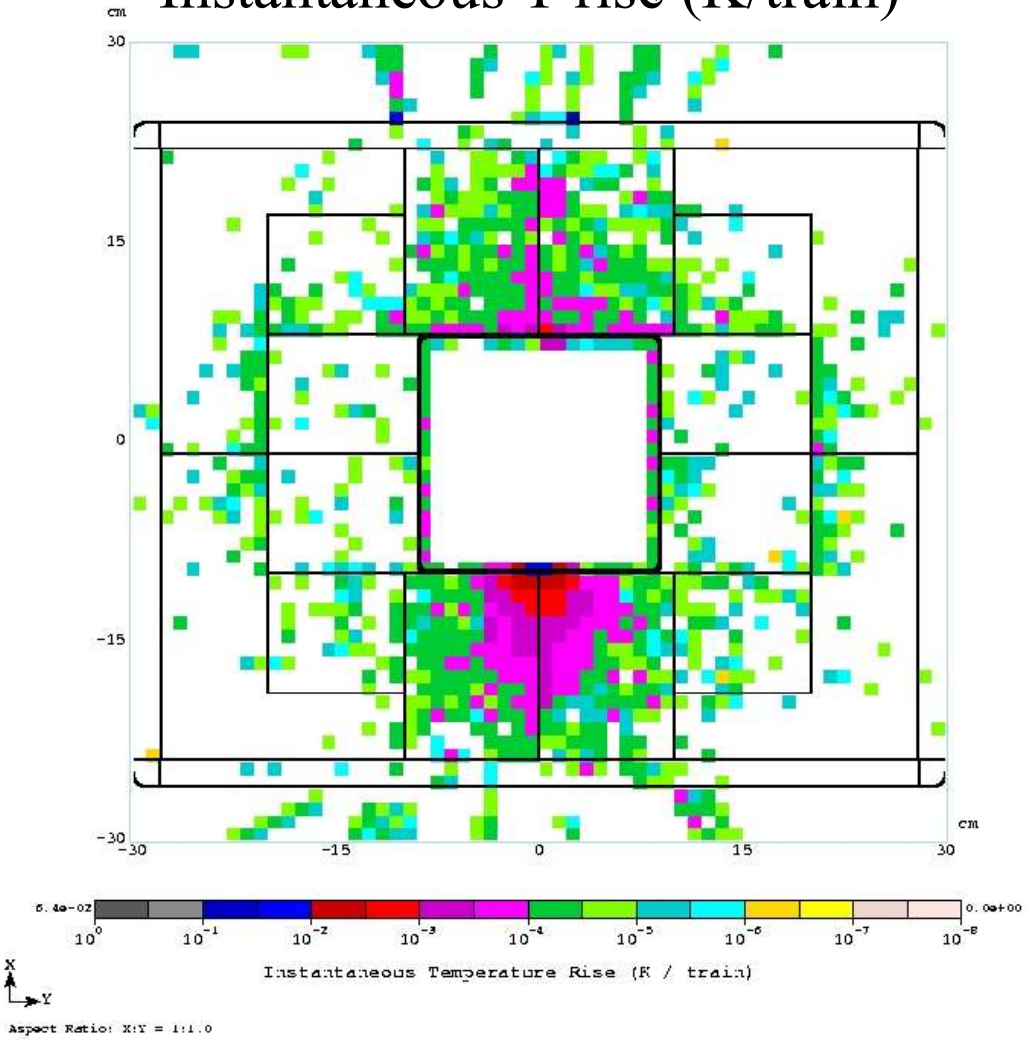


PD~100 mW/g
ΔT~ 0.1 K/train

Power Density (mW/g)



Instantaneous T rise (K/train)



Conclusions

- Considered 250 GeV high luminosity option, 0 and 120 nm offsets
- No contribution from beamstrahlung photons
- Synchrotron photons are generated in chicanes
- Energy deposition effects are generally ~10 times higher for 120 nm offset
- Dynamic heat load looks similar to the STRUCT calculations
- Activation in some elements > 1 mSv/hr
- Stress and temperature seems to be OK in hot elements