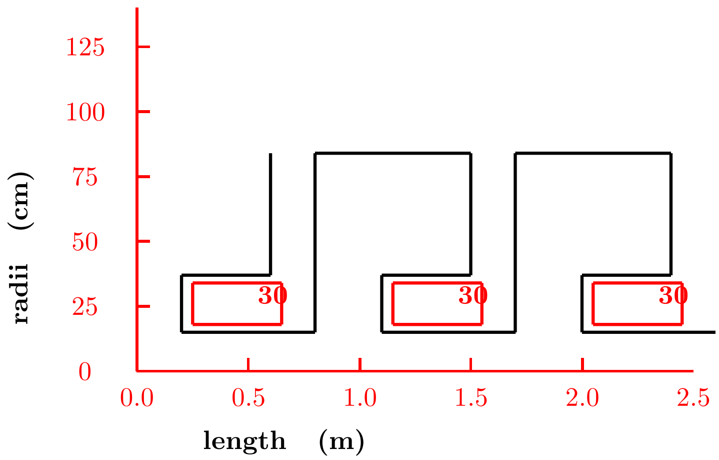
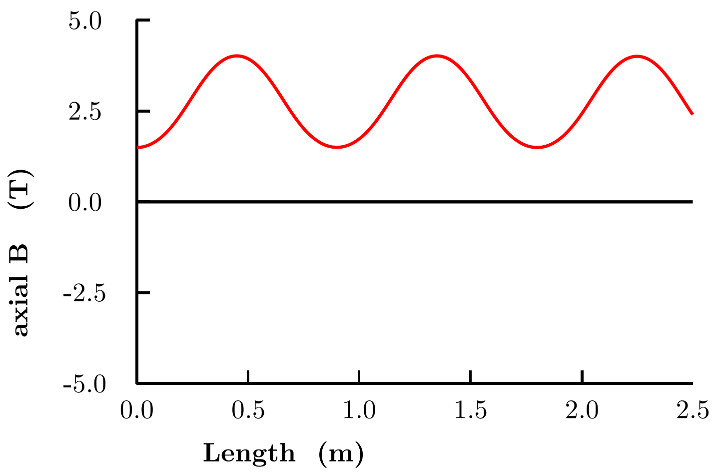
CERN 88 MHz

Note:
dimensions from CERN drawing
currents by me for 200 MeV/c.

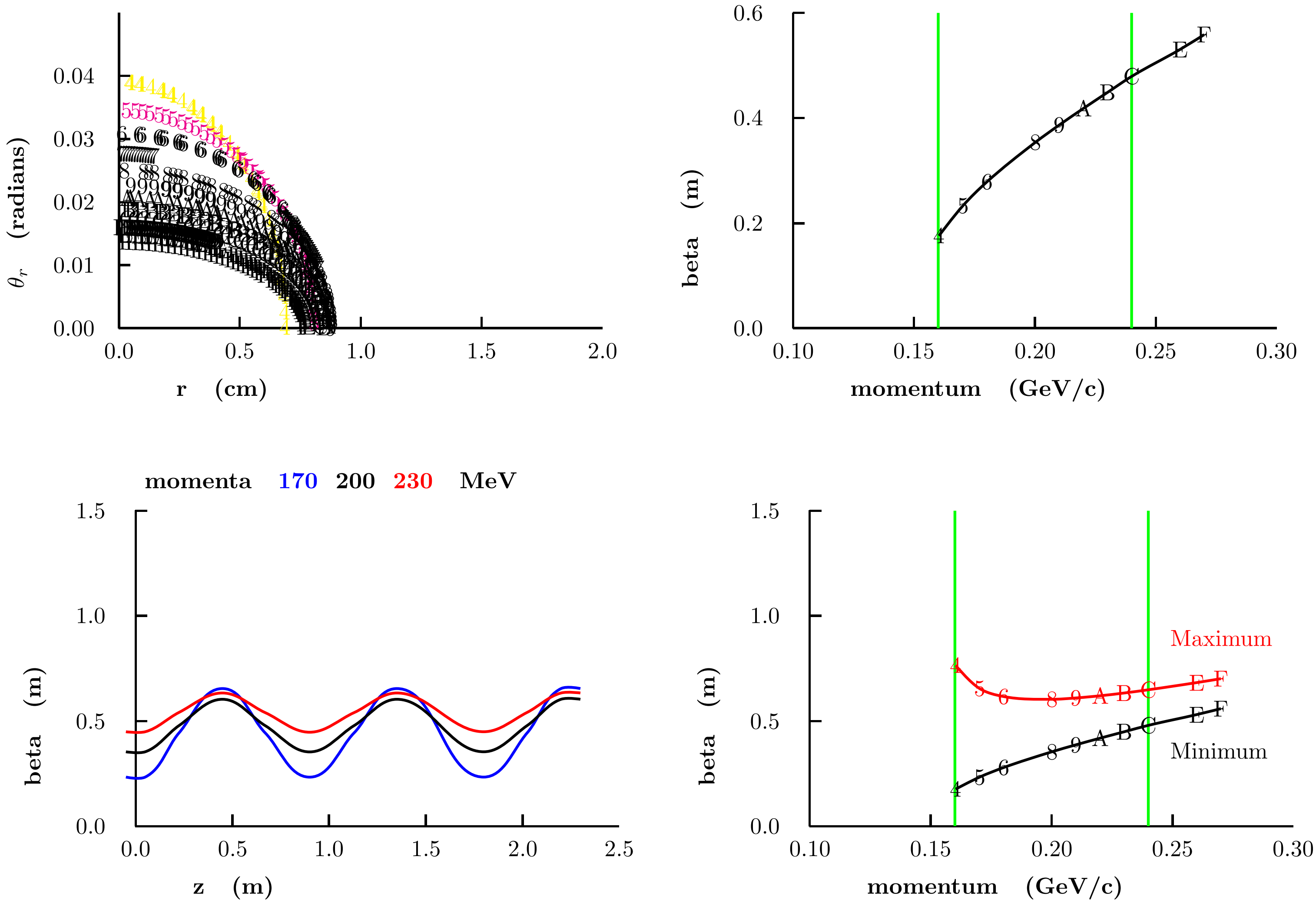
len1	dl	rad	dr		I/A
m	m	m	m		A/mm^2
0.250	0.400	0.180	0.160	3	30.47
0.750	0.400	0.180	0.160	3	30.47

amp turns 3.9 (MA)
amp turns length 6.37 (MA m)
cell length 1.8 (m)





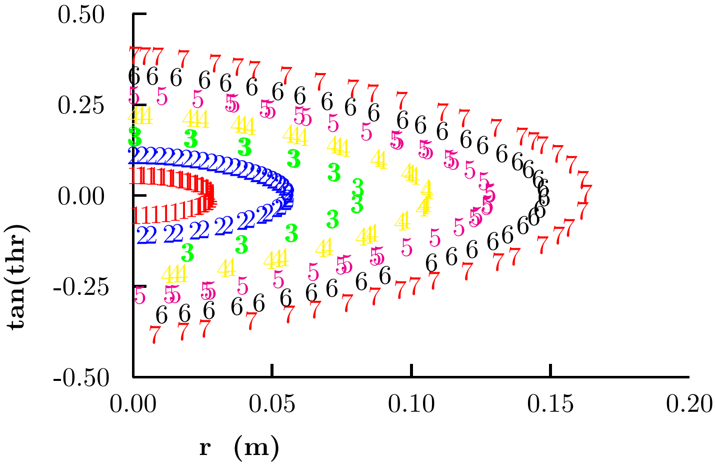
Paraxial Parameters



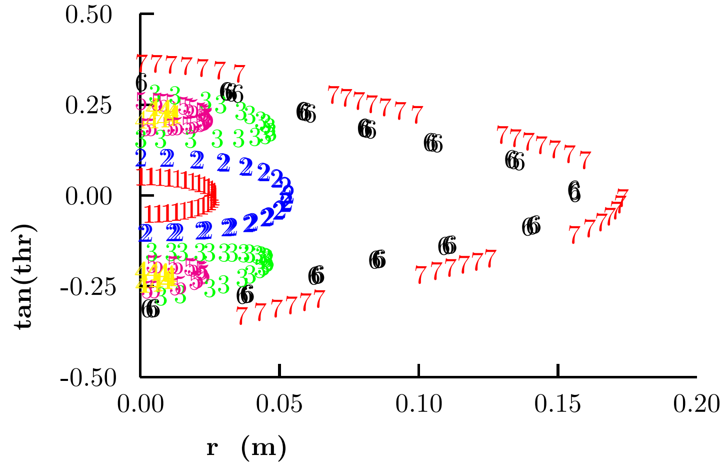
Acceptance

Examples of Phase Plots:

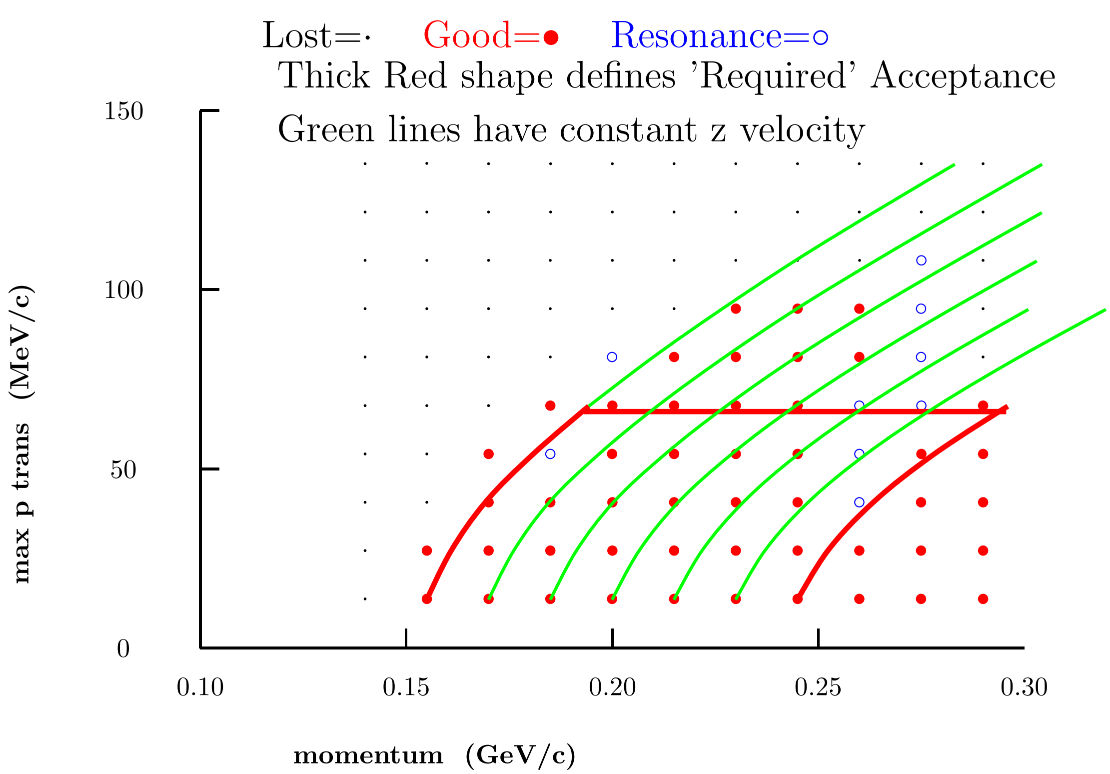
mom= 245 (MeV) Good



mom= 260 (MeV) With Resonances

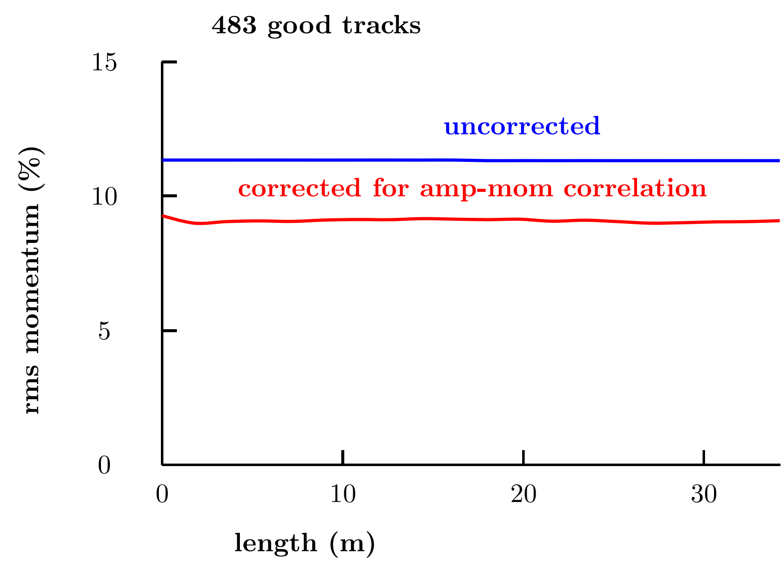


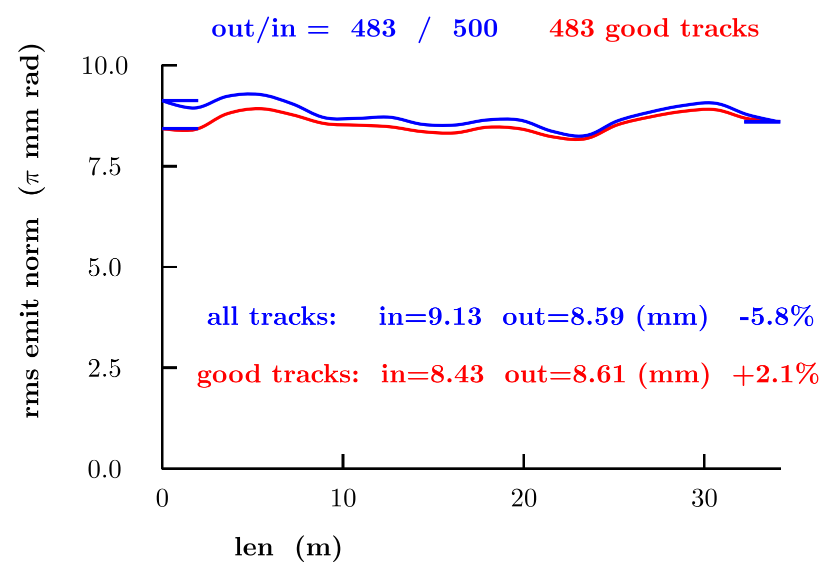
Acceptance



Tracking Gaussian Beam

No material or RF
500 particles, σ_p/p=9%, $\epsilon_\perp$=9 (π mm)
3.4% loss





Conclusions

- Mean Beta function depends only on cell length & dp/p acceptance
- For 1.8 m & $+/-$ 20%   Meanβ = 35 cm
- Bmax depends on mean p
- Bmax=4T for 200 MeV/c
- For $\epsilon = 4 \times$ equilibrium, 'Required' θ acceptance=0.35 rad
- Mean Momentum acceptance is function of amplitude
- All 'Required' acceptance is transmitted
- But some regions are in integer resonances
- Cooling will probably not occur in these regions
- But Scynchrotron oscillations moves tracks about in mom, in and out or resonances
- transmission of Gaussian σ_p/p=9%, ϵ=9mm, is 97 %
- Note: in cooling channel, coil currents should scale as mom rises in acceleration, and falls in absorber
- **CERN 88 MHz lattice looks GOOD to me**