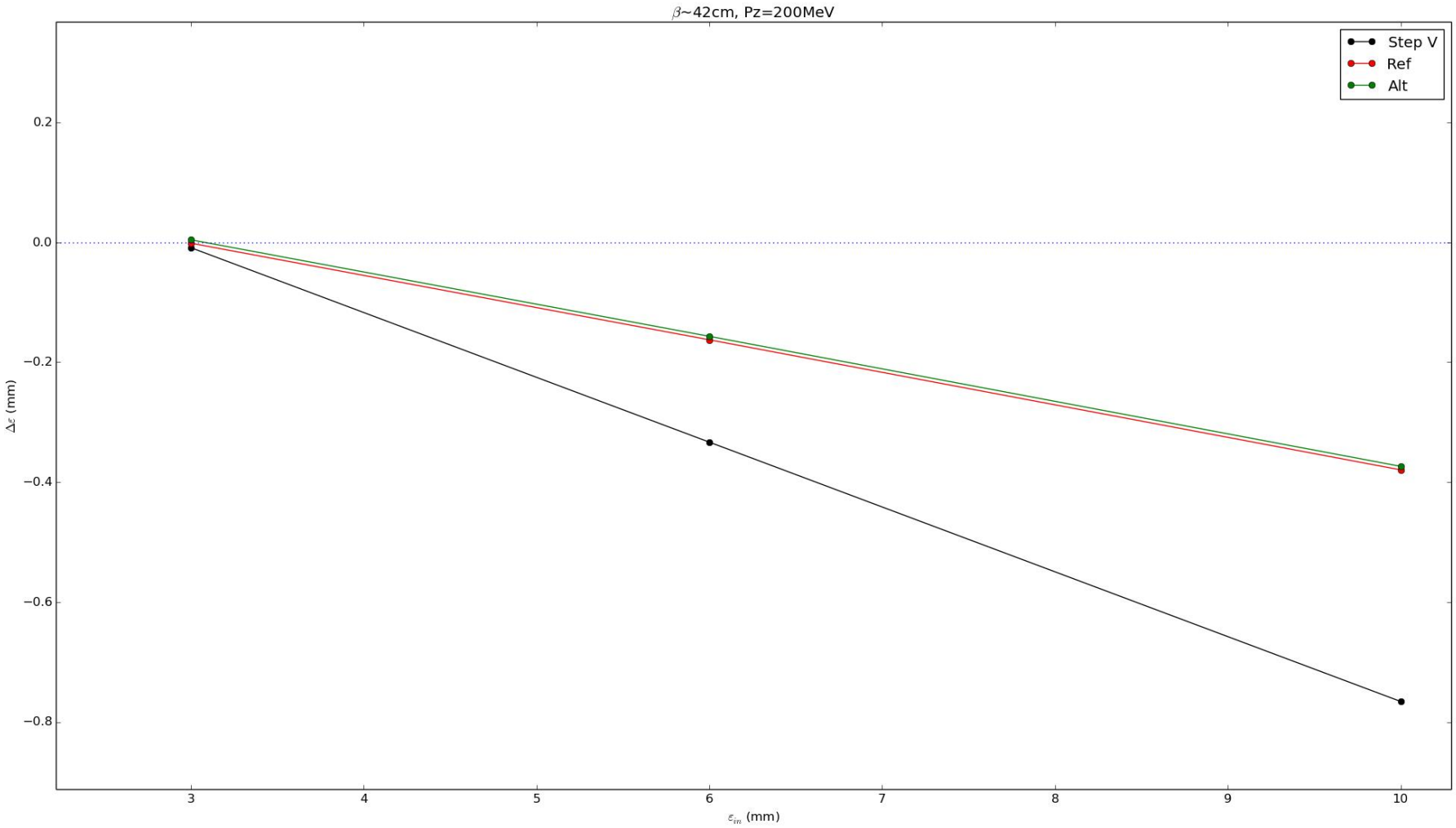
Step V vs. Reference vs. Alternatice Lattices

V. Blackmore

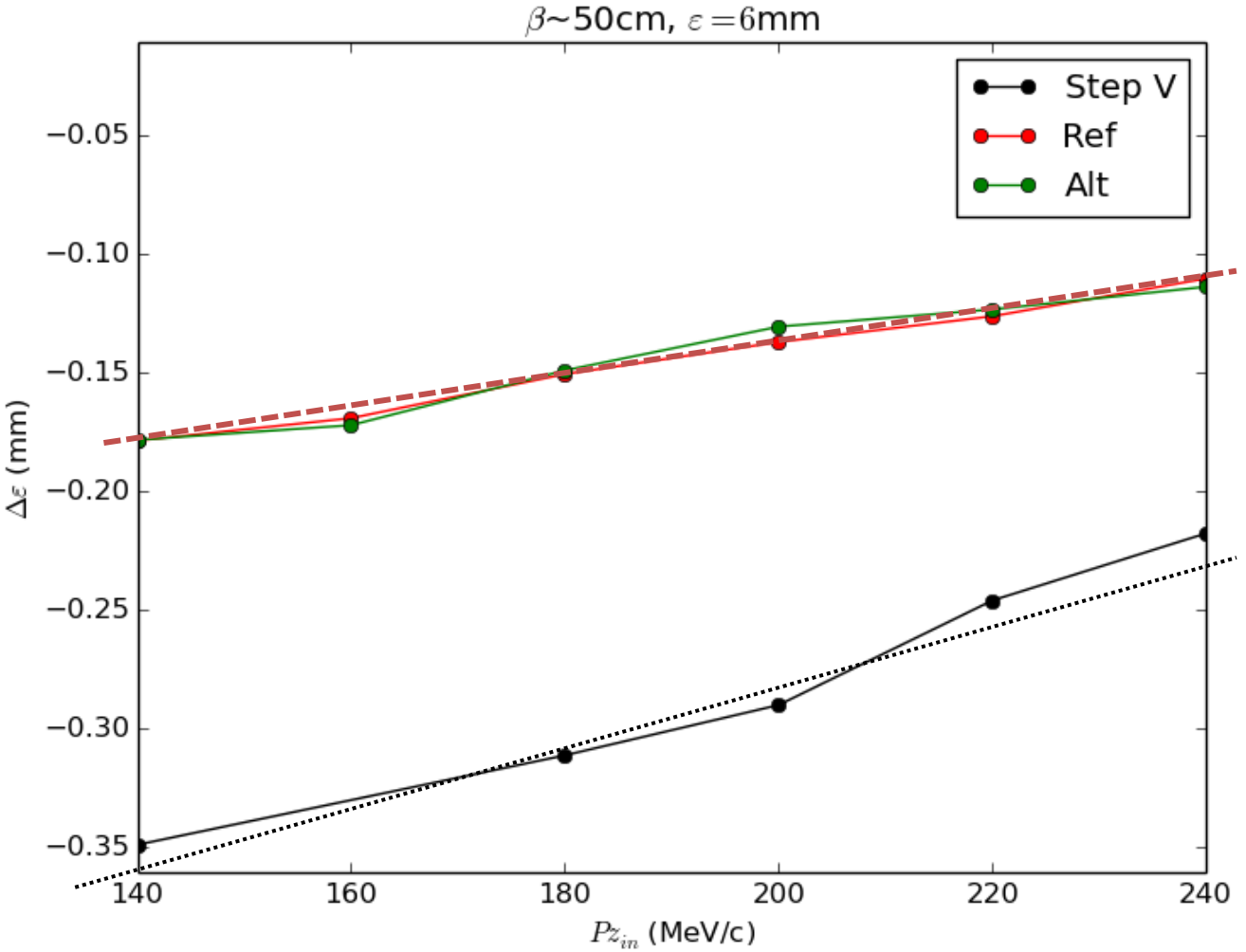
- Linear optics only
- All absorbers are Lithium Hydride
- Transverse performance comparison

- Thinking of “paper-like” plots…



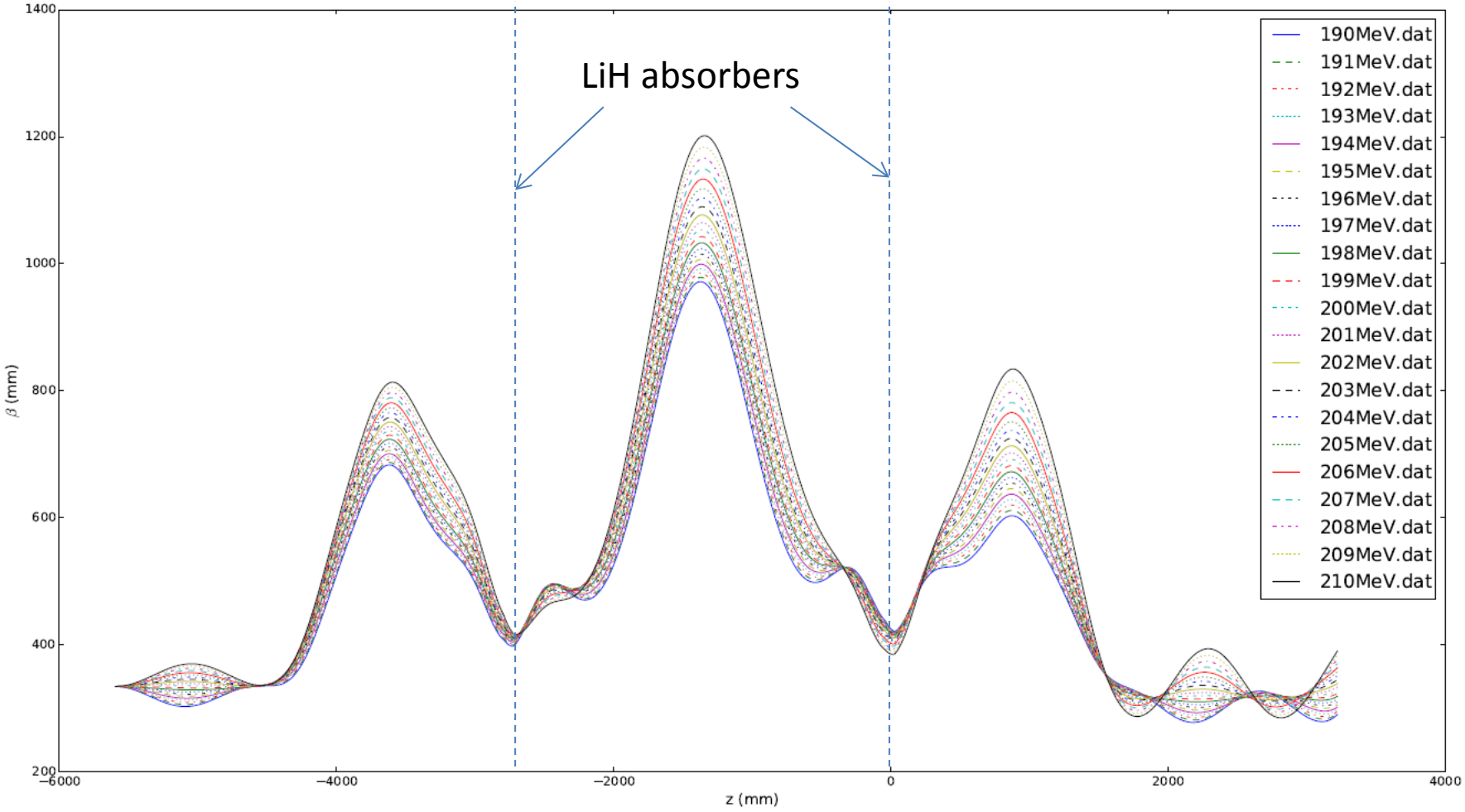
Cooling performance #1

- Keep β~42cm at the absorber for all lattices, and Pz~200 MeV/c
- Step V has **two** LiH absorbers
- Ref. & Alt. lattices have **one** LiH absorber
- No surprises re: cooling capabilities



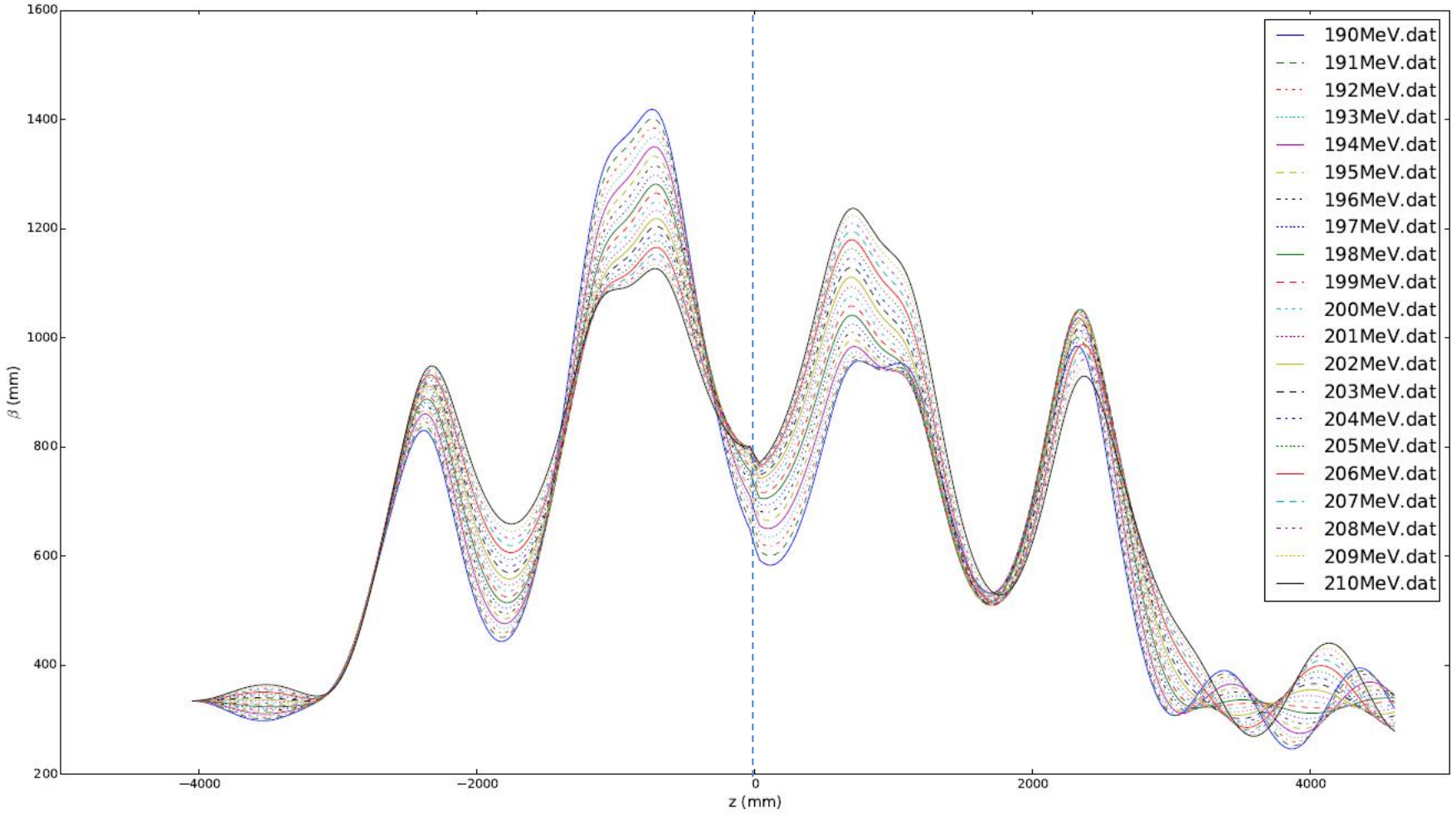
Cooling performance #2

- Keep β~50 cm at the absorber for all lattices, and $\varepsilon = 6$ mm
- Vary initial momentum
- "Balancing act" keeping β~50 for all momenta
  - Probably best to fit a line through points for best approximation
- Less variation than Step V, but then they have fewer absorbers.



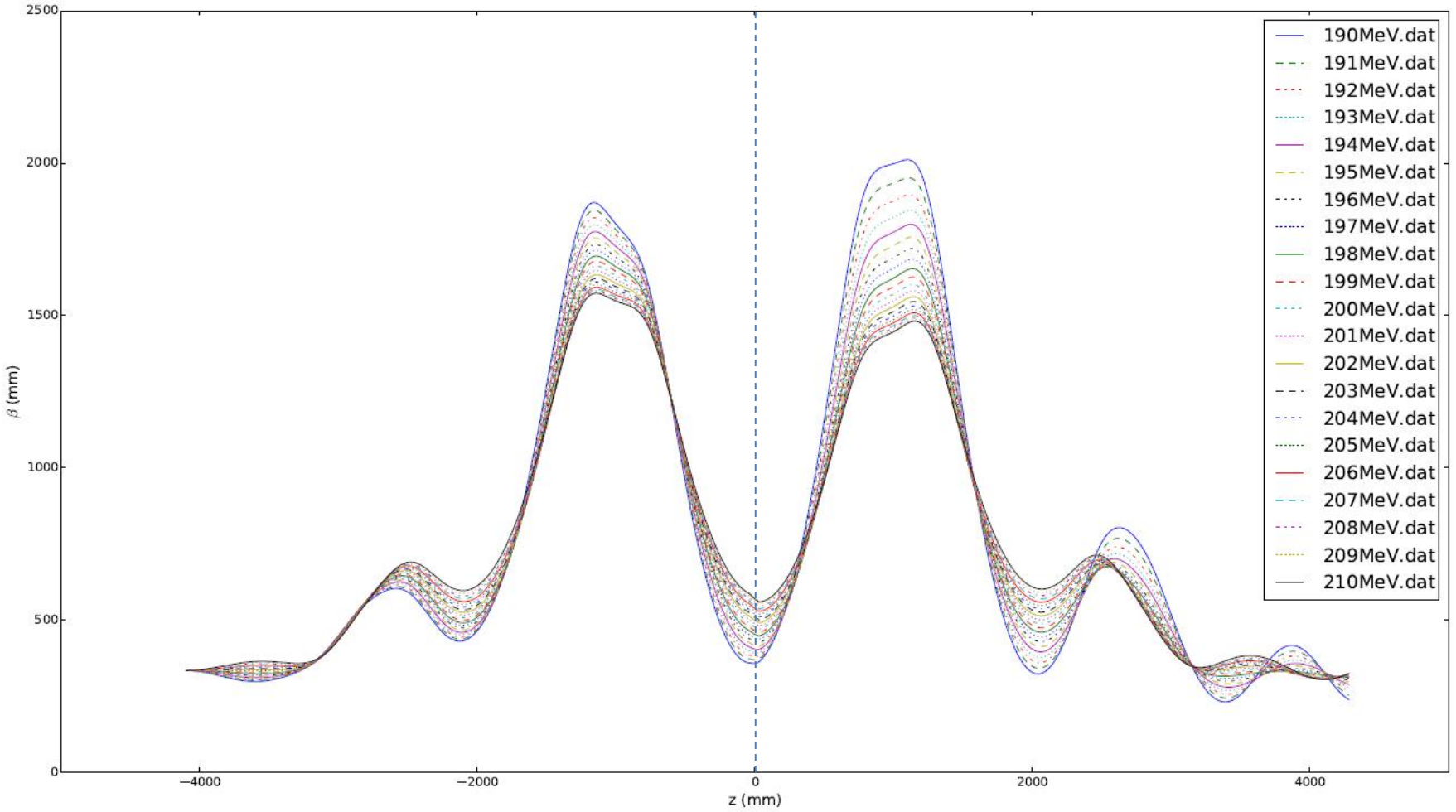
"Momentum Acceptance" in Step V

- Match at Pz~200 MeV/c
- Vary Pz and look at β
  - **Did not** rematch β for new momenta
- Little variation in β at absorber positions



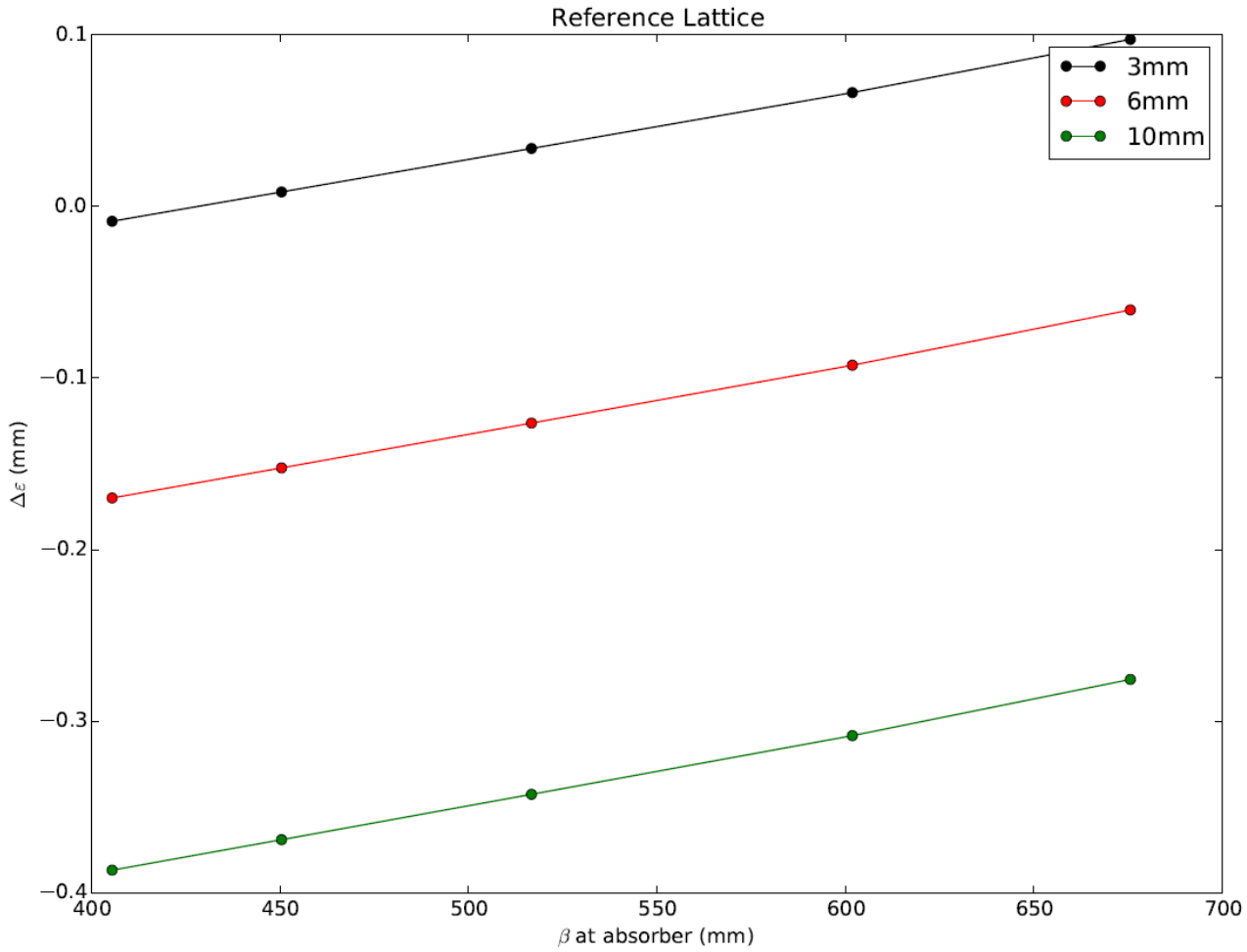
"Momentum Acceptance" in Reference Lattice

- Match at Pz~200 MeV/c
- Vary Pz and look at β
  - **Did not** rematch β for new momenta
- Larger variation in β at absorber position



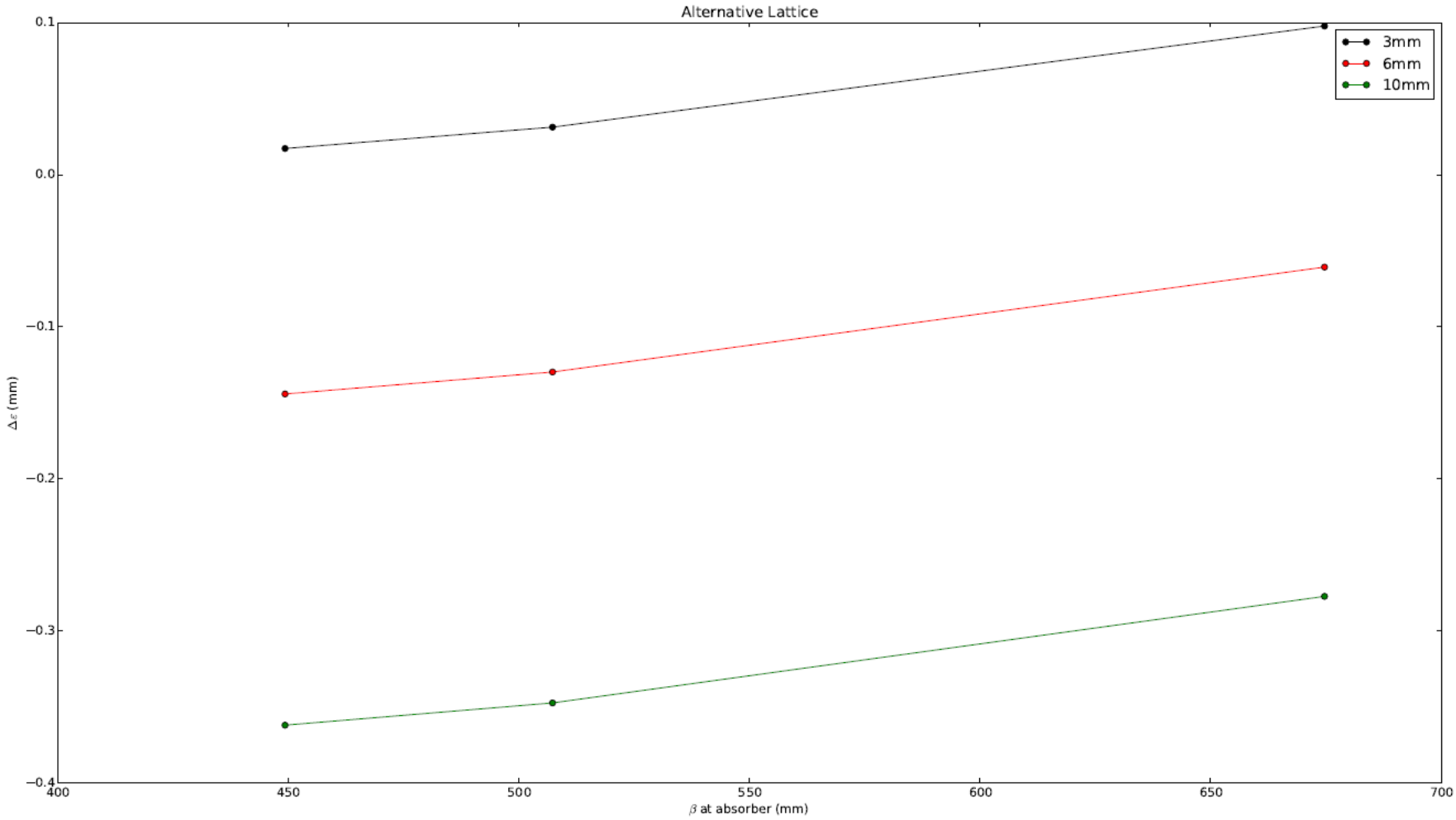
"Momentum Acceptance" in Alternative Lattice

- Match at Pz~200 MeV/c
- Vary Pz and look at β
  - **Did not** rematch β for new momenta
- Moderate variation in β at absorber positions



Cooling vs. Beta: Reference Lattice

- Vary β at absorber and see how different emittance beams cool
  - Keep momentum constant (200 MeV)
- Step V plot in progress (more complicated…)



Cooling vs. Beta: Alternative Lattice

- Vary β at absorber and see how different emittance beams cool
  - Keep momentum constant (200 MeV)
- Step V plot in progress (more complicated…)
- Approx. same as reference lattice, **but** more difficult to find small β