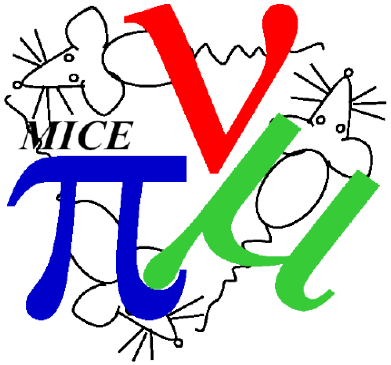
Muon Chicane



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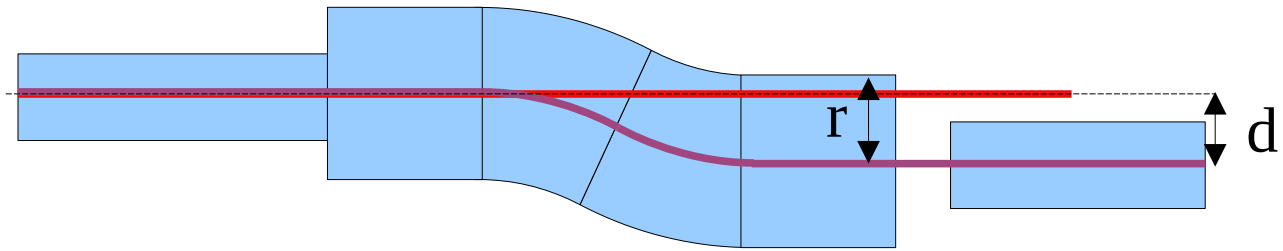
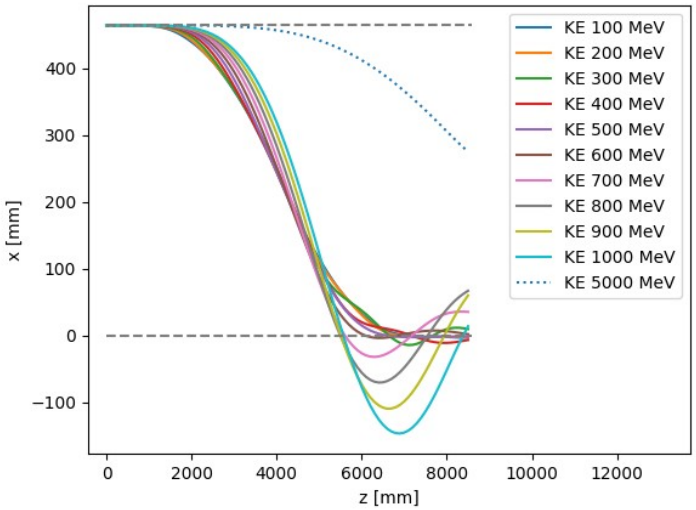
Concept 1 (Last time)



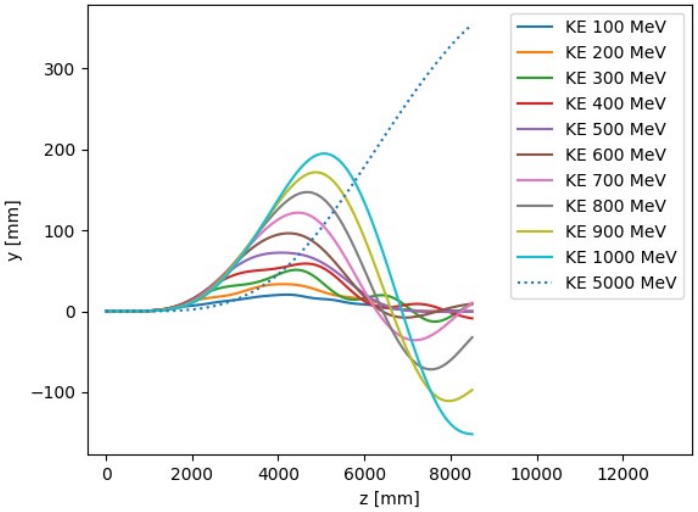
- Schematic of proton dump concept
  - Take 1.0 m pipe diameter as largest “reasonable” chicane aperture
    - What about space for shielding?
  - Seek transverse displacement of beamline by ~ 0.4 m
- Coil radius in the chicane determines maximum proton displacement
- Lower transverse displacement → stronger B_z required

Concept 1 (Last time)

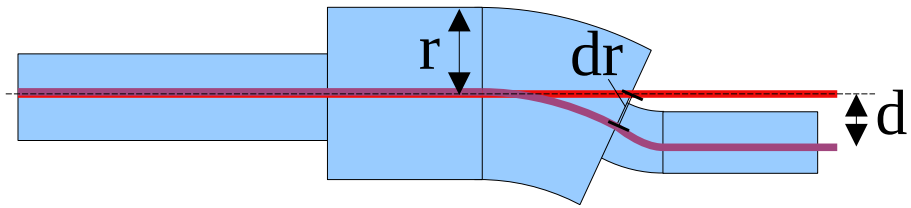
B_z	-4 T
Theta	9 degrees
r_{curv}	20 m



- We can get about 450 mm proton displacement from meson beam
- Does that leave enough space?
  - Superconducting solenoids
  - Radiation shielding
  - Etc
- Very robust solenoids!
  - High radiation etc



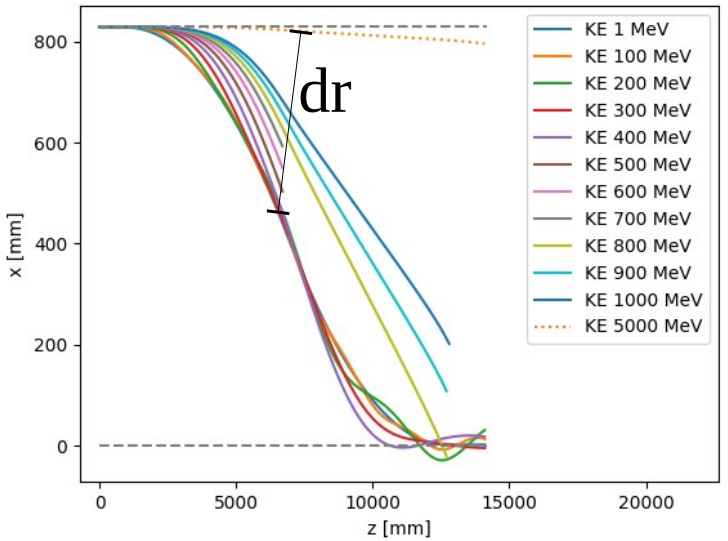
Concept 2 (This time)



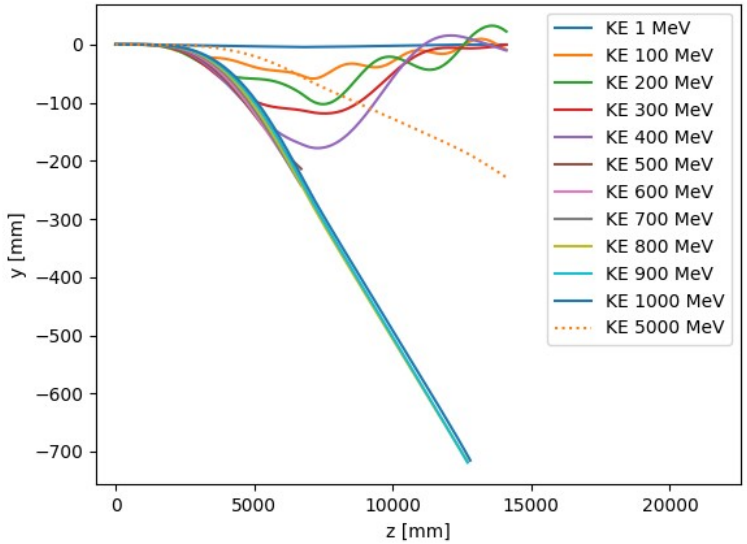
- Take protons out inside chicane
- In principle can get much more separation between proton and muons
  - i.e. some of the chicane bend contributes to separation
- In principle can use lower B-field → normal conducting
- Making gaps in hardware/etc may be easier
  - Fewer forces, cryogenics, support structure concerns
  - But need awkward solenoid juggling inside the chicane

Concept 2 (This time)

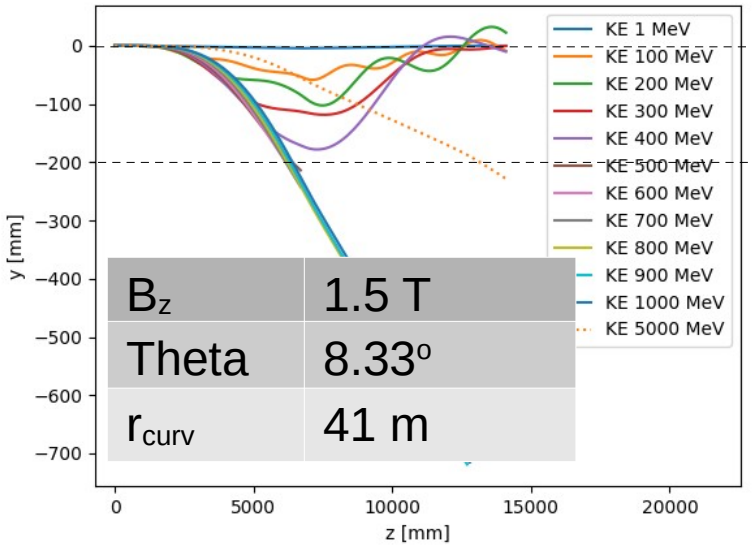
B_z	1.5 T
Theta	8.33 degrees
r_{curv}	41 m



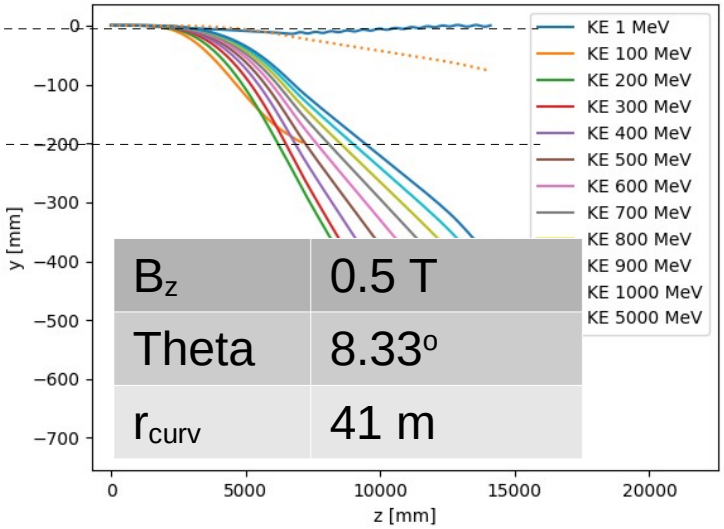
- We get about 400 mm *dr*
- Does that leave enough space?
  - Superconducting solenoids
  - Radiation shielding
  - Etc
- Field less aggressive
  - Still superconducting?



Moving to lower fields



B_z	1.5 T
Theta	8.33°
r_{curv}	41 m



B_z	0.5 T
Theta	8.33°
r_{curv}	41 m

- Looks like dispersion is inversely proportional to B_z