Energy Spectra Comparison (Feynman *vs*. Spot)

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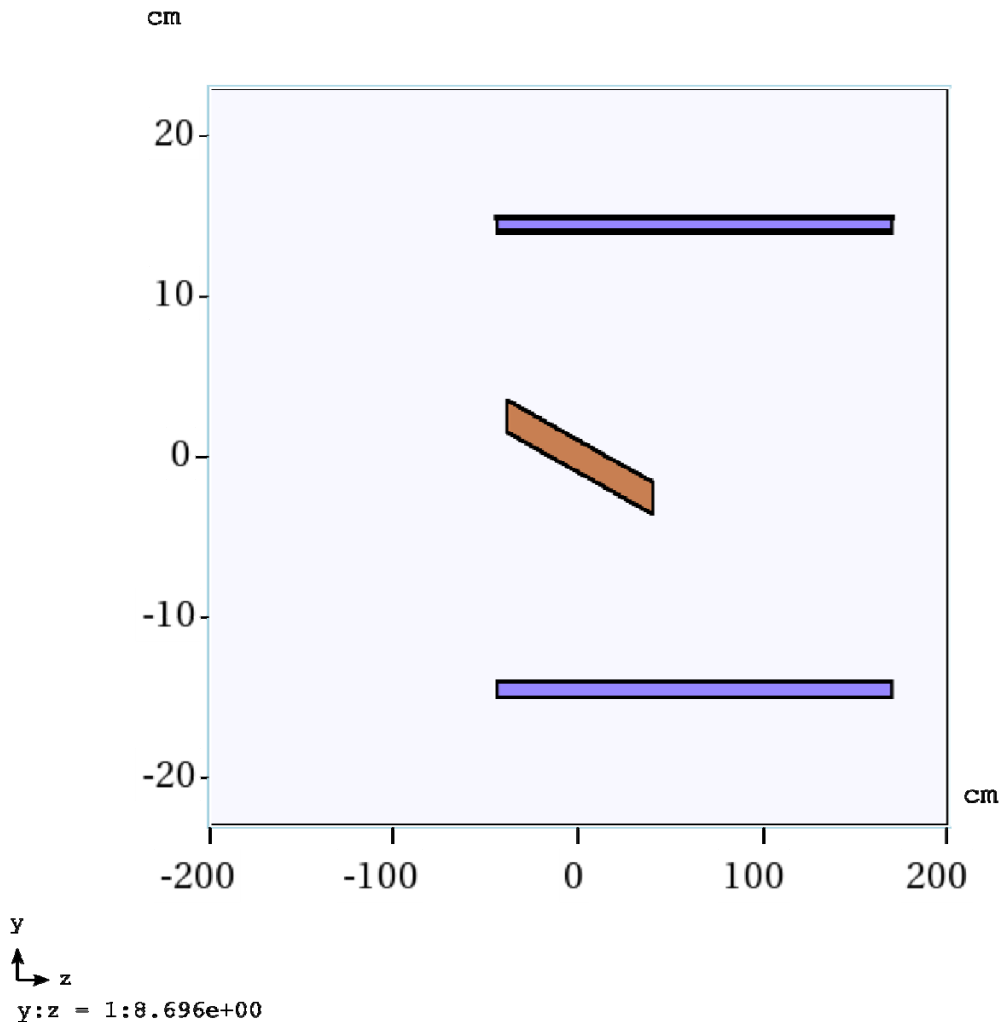
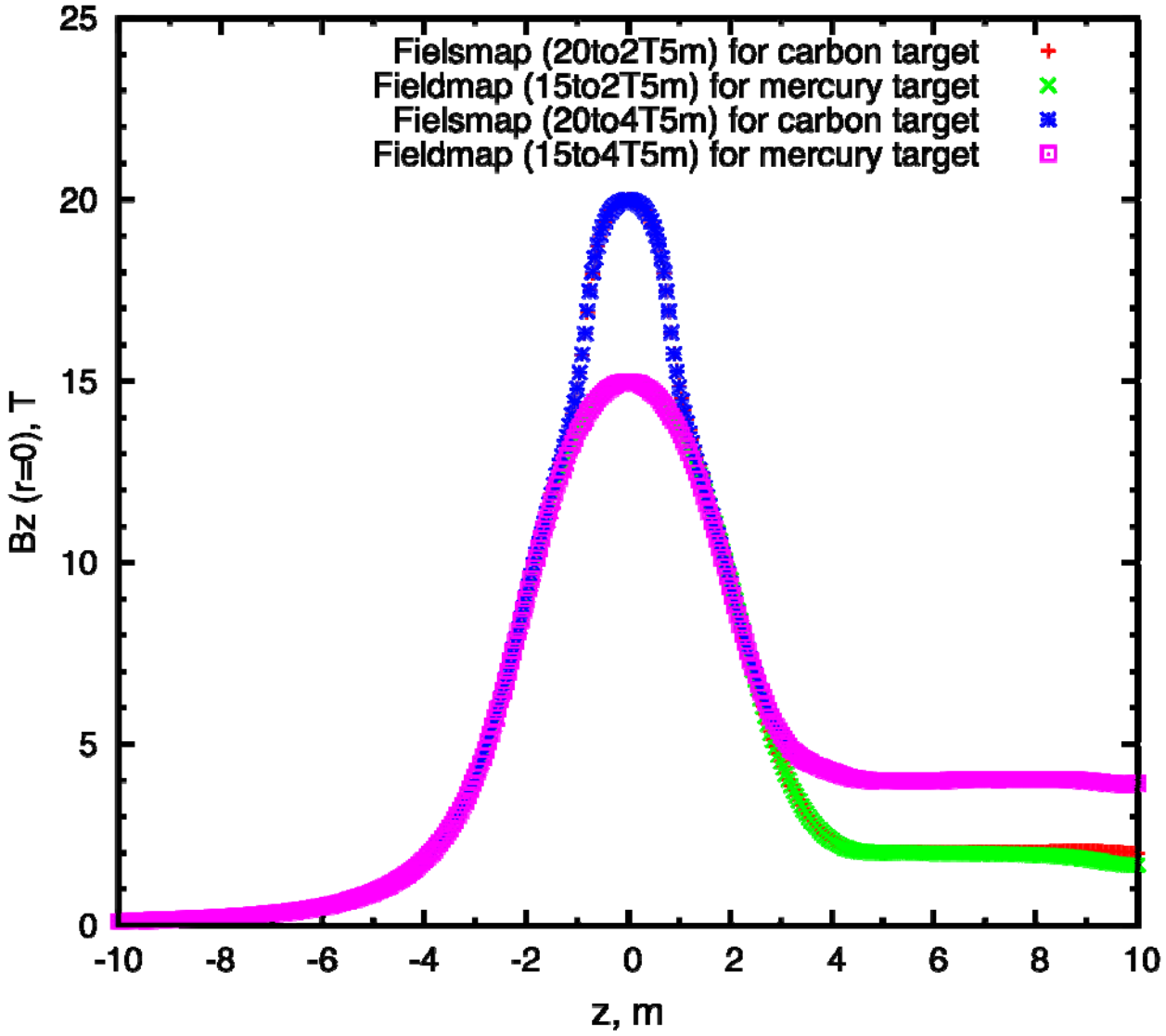
AAG meeting, BNL

July 30, 2015

Target + Vacuum Pipe + 20to4T5m Fieldmap



Fieldmap on SC axis



Method

- MARS15 Installation

  Feynman (Princeton): New Version(2015)

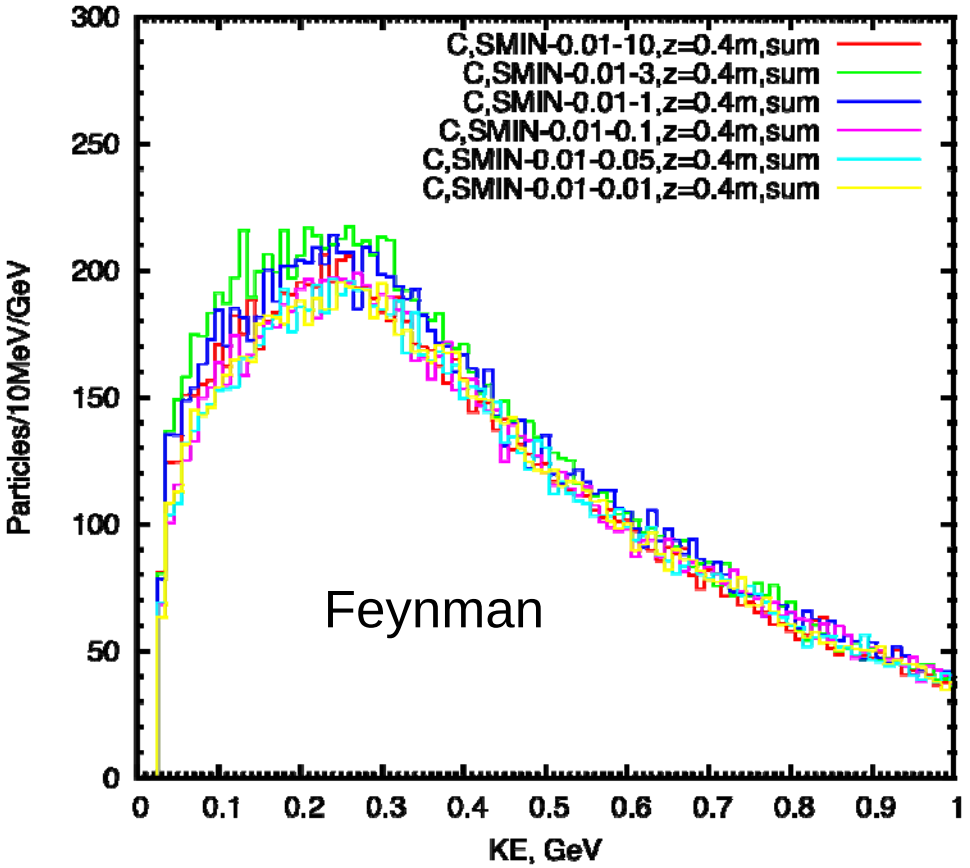
  Spot (BNL cluster): Old Version (2014)
- ROOT-based geometry setting;
- Generate simple Gaussian beam with zero emittance (launching at z = -100 cm) by MARS.INP setting and proceed through 20to4T5m fieldmap;
- Collect beam at z = 0.4 m (r = 14 cm) and z = 2 m (r = 23 cm) in the same MARS run;
- Sum all particles (positive + negative)

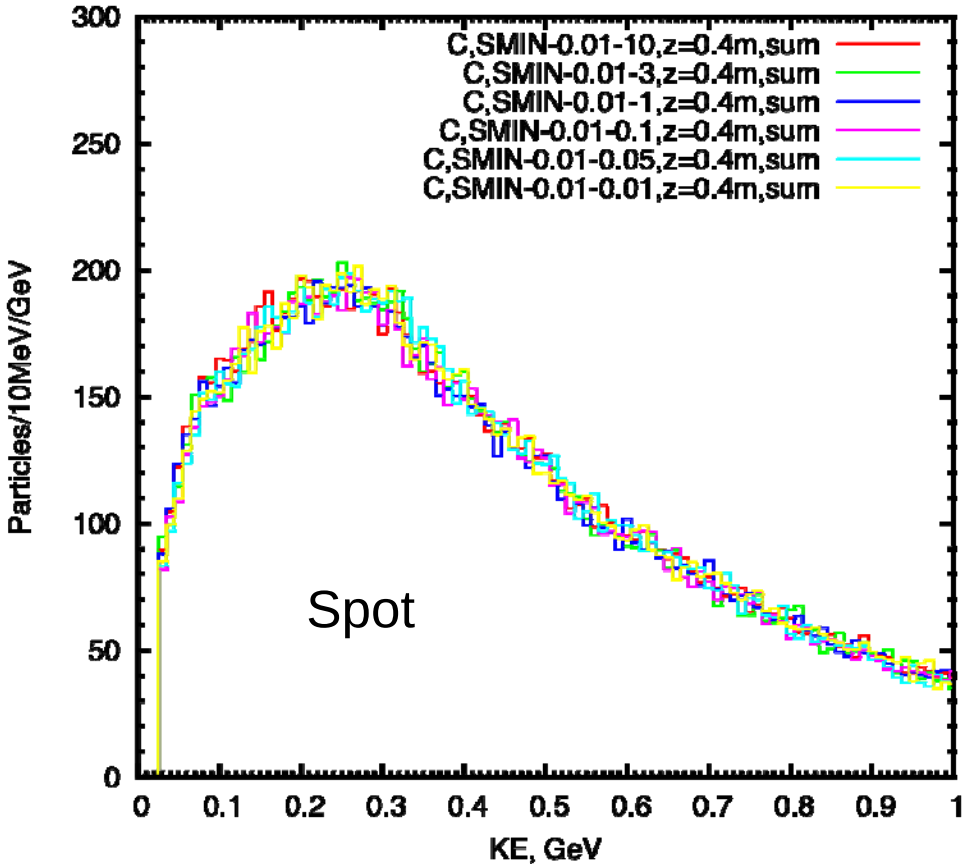
SMIN/MTSM/MTSH Cards

- **SMIN STEPEM STEPH**

  Real variables specifying global boundary localization precision and pilot step lengths.
- Two methods to set very small step size for tiny objects like BE windows. The 1st method is to set SMIN card with small step size for all materials (slow running speed). The second method is only set small step size for thin BE windows with MTSM (Real variables giving the step length for boundry localization, applied only to specific materials.) and MTSH card (Real variables giving the pilot step length, applied only to specific materials.).

Feynman *vs*. Spot (z = 0.4 m)





Feynman *vs*. Spot (*z* = 2 m)