GeantV-Physics: Next steps

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Status

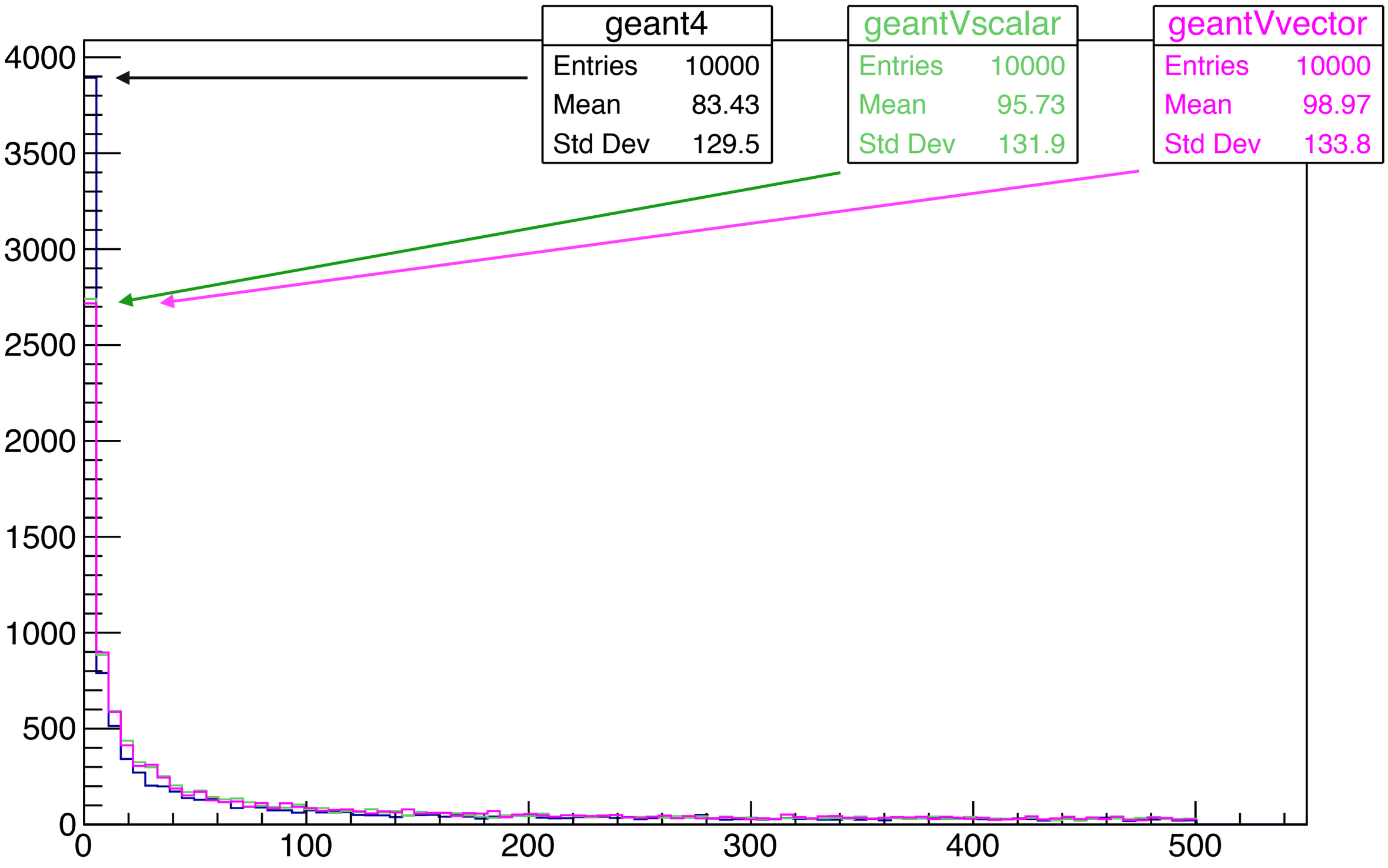
- General validation test - outputs ‘G4’ vs GV
- Revised Compton model
  - using EmModel class for common code
  - validation shows deviation from Klein-Nishina
- First implementation of other e/γ interactions

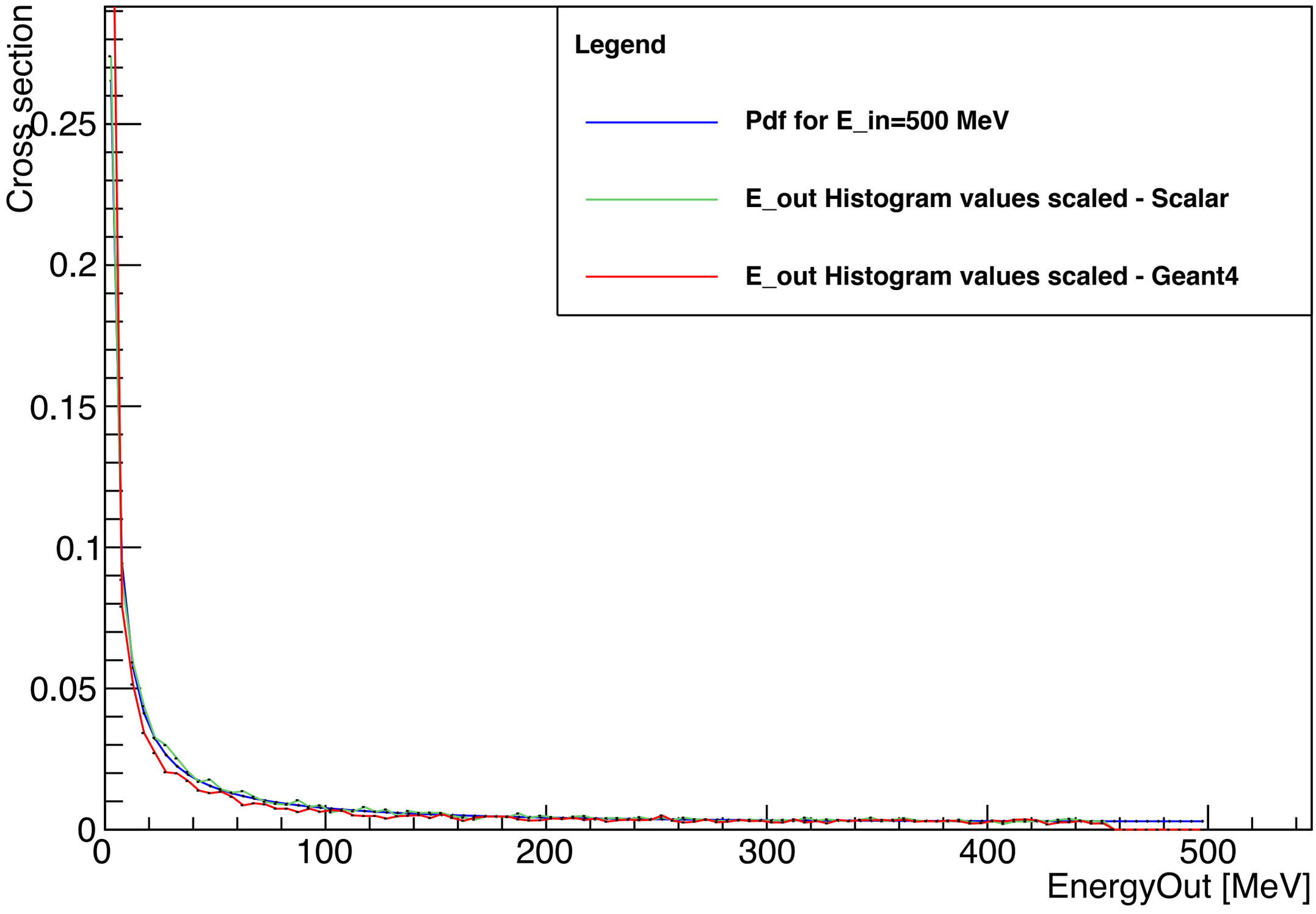
Next steps

- Alias method: create unit test
- Compton model
  - validation - mono-energetic projectiles
  - review implementation
  - address peak in KN formula @ high energies
  - refine interface with GeantV tracking

KleinNishina comparison between G4 and Geant V

KleinNishina/EnergyOut1/500MeV





Superimposed the normalized probability density function with the values obtained from the histogram of the energy output of photons, scaled to the number of entries.

After-next steps

- Proceed similarly with other models
  - validation & code inspection
- Physics Lists
  - mixing 1 physics with rest tabulated (test)
  - using validated physics models
  - integrating also Multiple Scattering

Milestones - 1

- KN Compton model validation - code available
- KN Compton Review implementation - **Oct 8th**
- Refine interface with GeantV tracking
  - First **Oct 8th**, Second - **Oct 20th**

Milestones - 2

- Alias method
  - create unit test - **October 13th**
  - fix potential problems - **Oct 20th**
- Alternative sampling method(s)
  - if/as needed - **Nov 4th**?
  - **cumulative**: simple

Milestones - 3

- Physics Lists: mix 1 physics with rest tabulated
    - testing in simple setups (slab) - 1 week
- Rest: must discuss how long & when
    - using 2+ validated physics models
    - integrating Multiple Scattering

Milestones - 4

- Validation, code inspection, fixes
- Photo-electric - November 18th
- e+/e- pair production - December 1st
- Ionisation - Dec 20th