

π^+ -Ar inclusive cross section measurement on ProtoDUNE-SP

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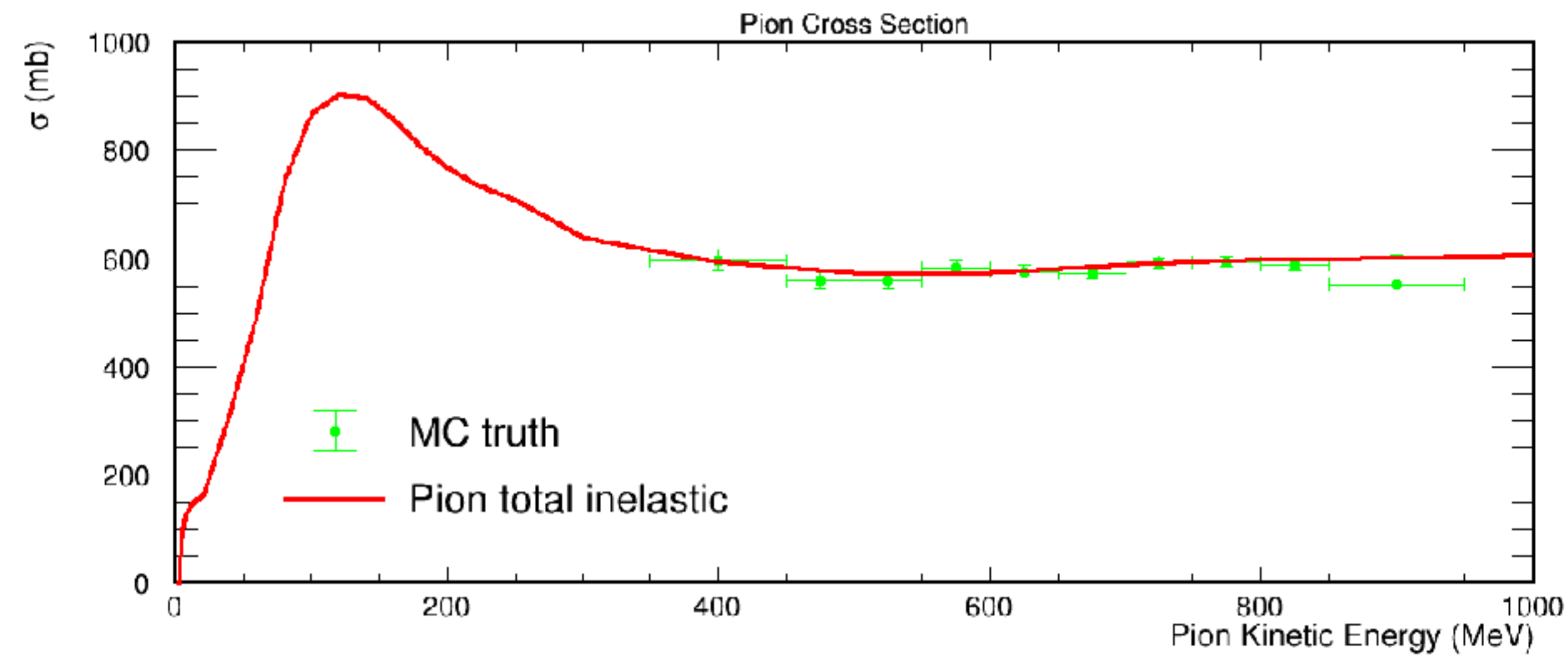


Updates

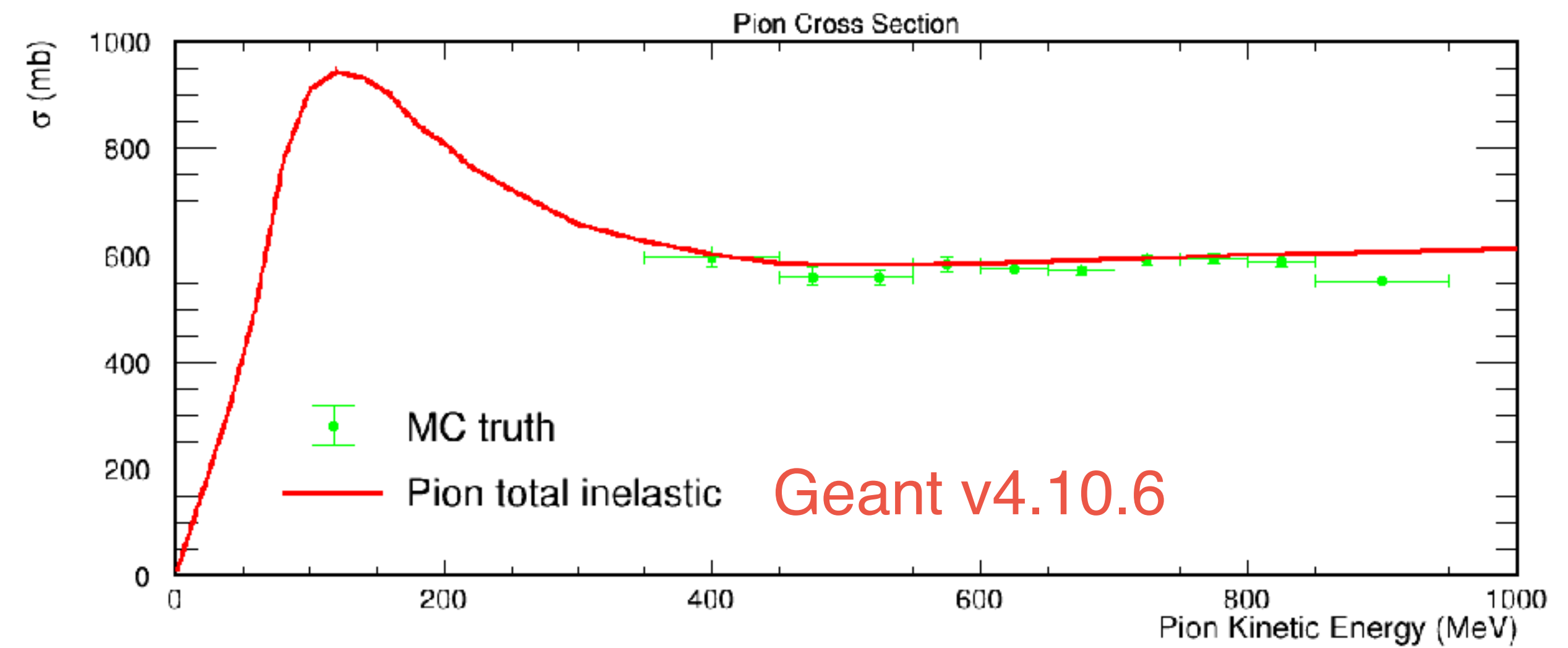
- Added a section in AnaNote appendix about error propagation
- Enable systematics evaluations

Geant4 version?

- I found the geant4 curve a bit different



I use exclusive_xsec.root

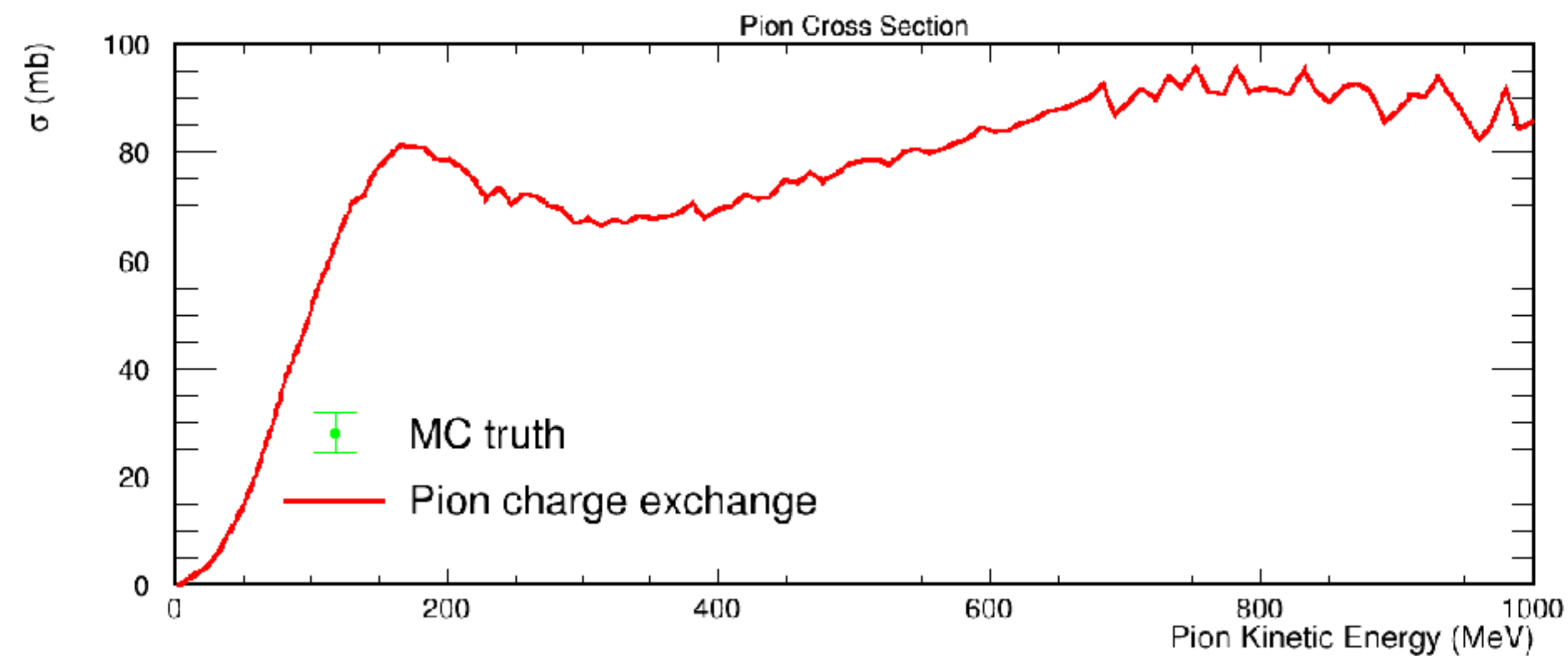


Kang uses LAr_PiPlus_exclusive_cross_section.root

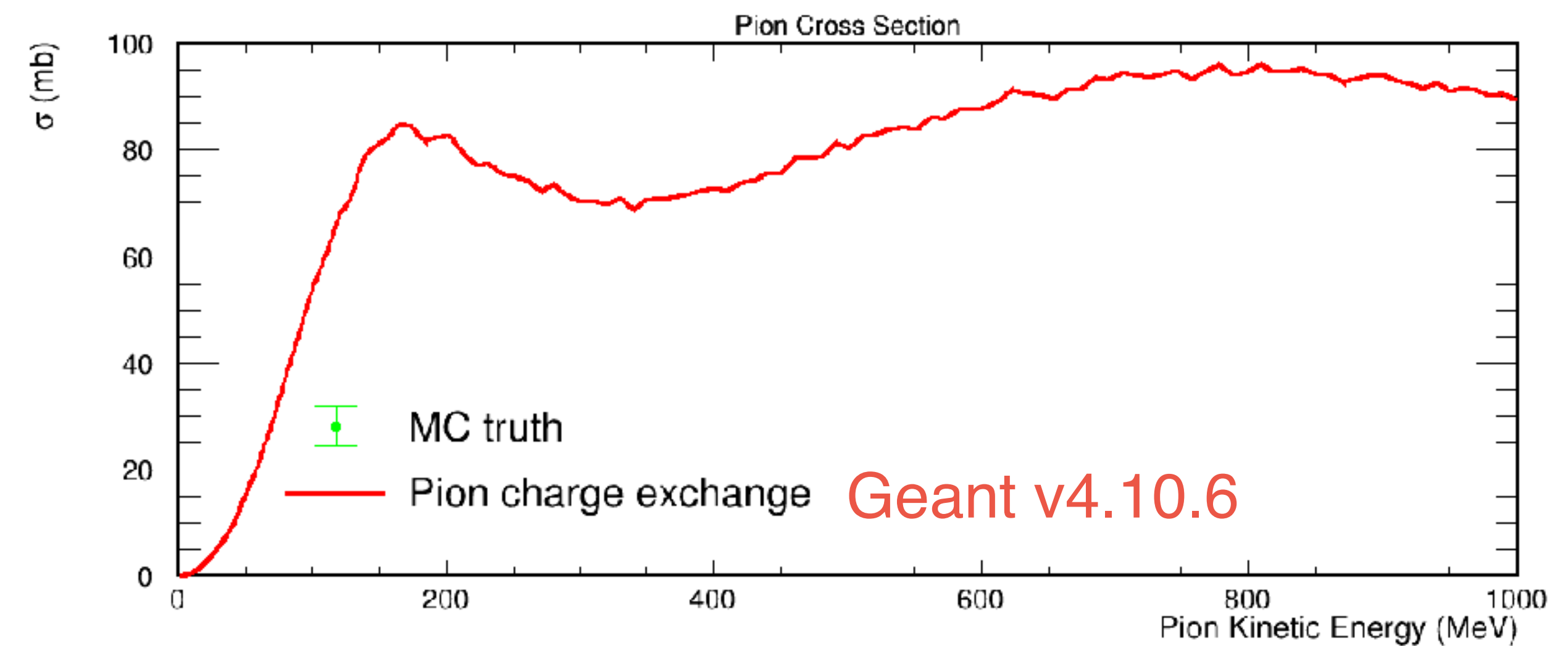
Differences just due to interpolation?

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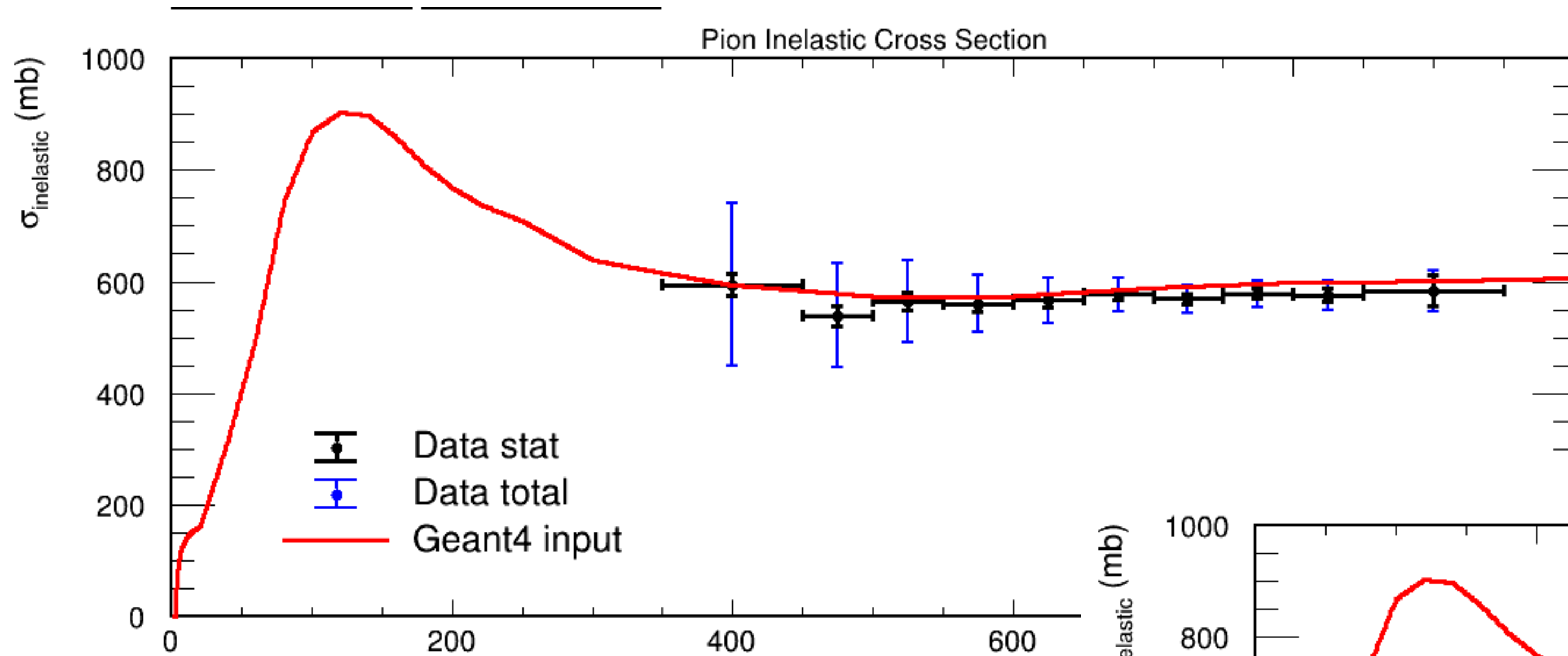
Differences just due to interpolation?

Systematics

- Take the MCXS for example, fluctuate MCXS by a scale of $\text{Gaus}(1, 0.15)$.
- Generate 60 toys, calculate their output covariance matrix.
- Combine the covariance matrix with the statistical output covariance matrix directly from unfolding.

Systematics

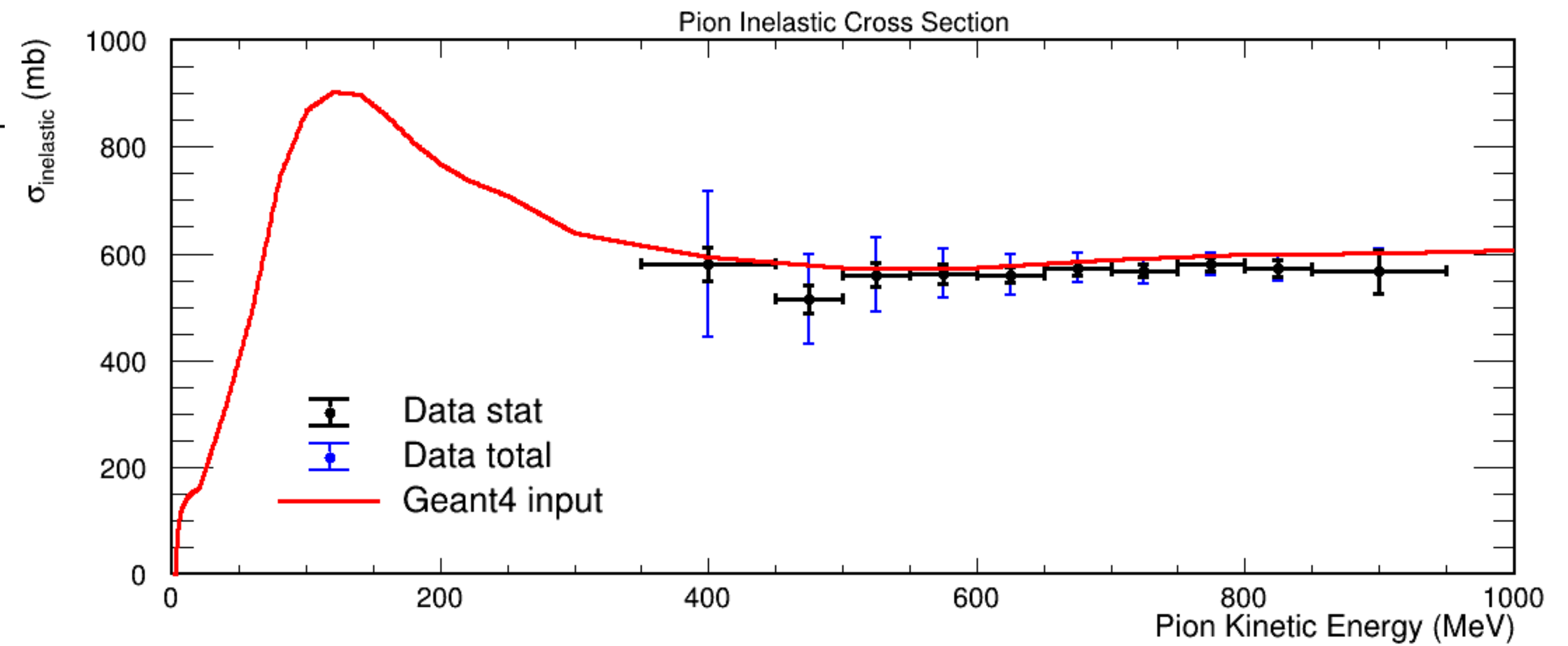
Take the MCXS for example



2 iterations

Total error from right to left (stat+sys:MCXS):
36.6909, 26.1714, 23.2558, 25.4878, 29.9718,
41.0132, 51.2533, 73.9972, 92.7753, 145.673

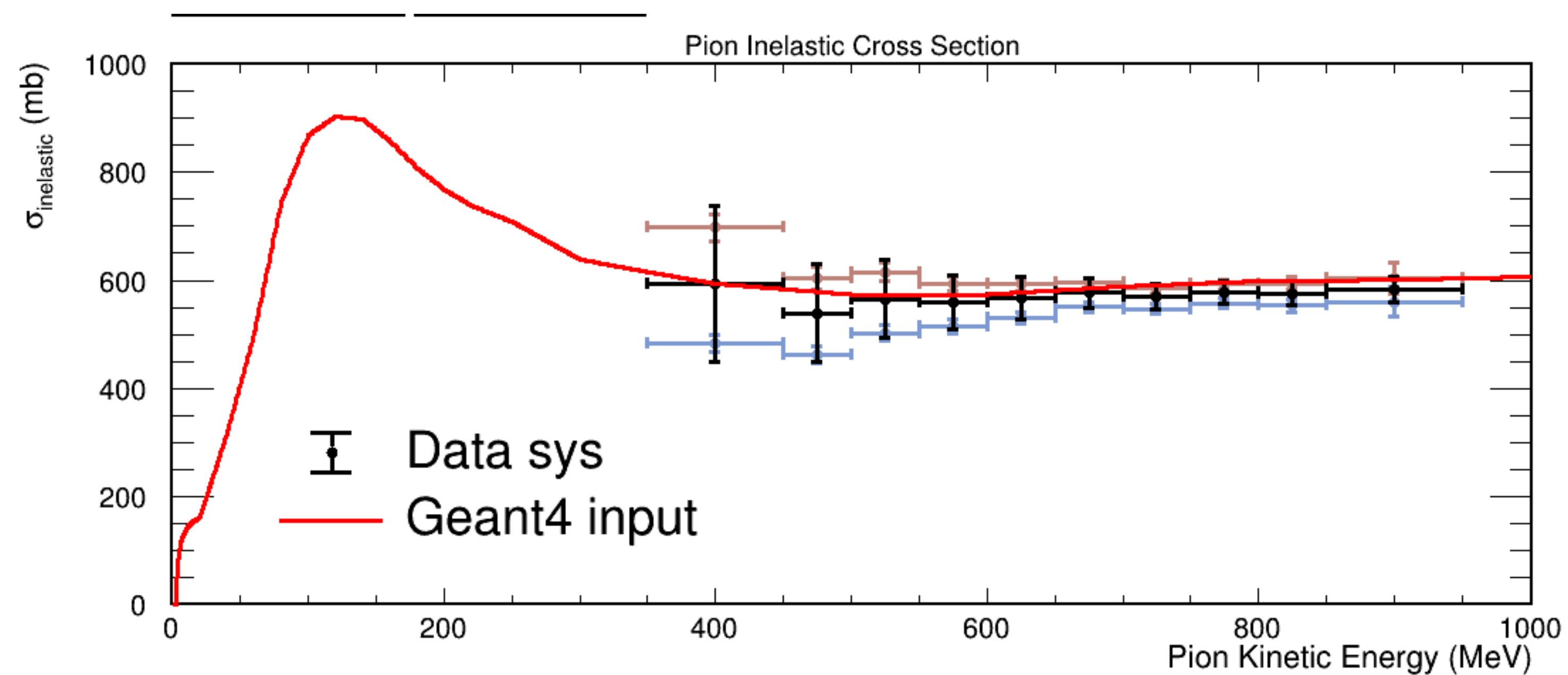
Total error from right to left (stat+sys:MCXS):
43.3625, 24.1853, 21.5833, 23.6835, 27.6231,
38.2703, 46.2777, 68.9034, 83.4375, 137.117



4 iterations

Systematics

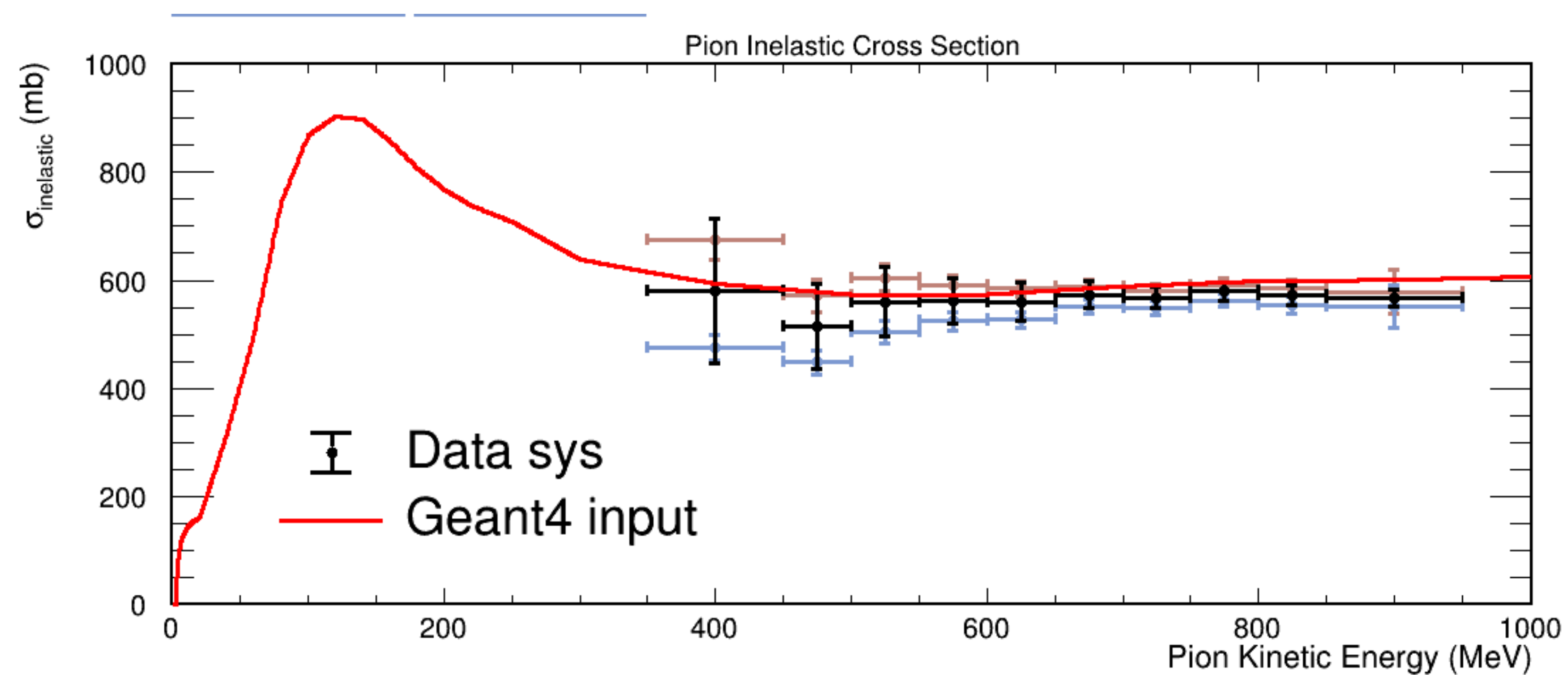
- Compare the result from the external covariance matrix and using the one-sigma value (0.85 and 1.15) directly.



2 iterations

Systematics

- Compare the result from the external covariance matrix and using the one-sigma value (0.85 and 1.15) directly.



4 iterations

Back-ups