

# New EM models and interfaces

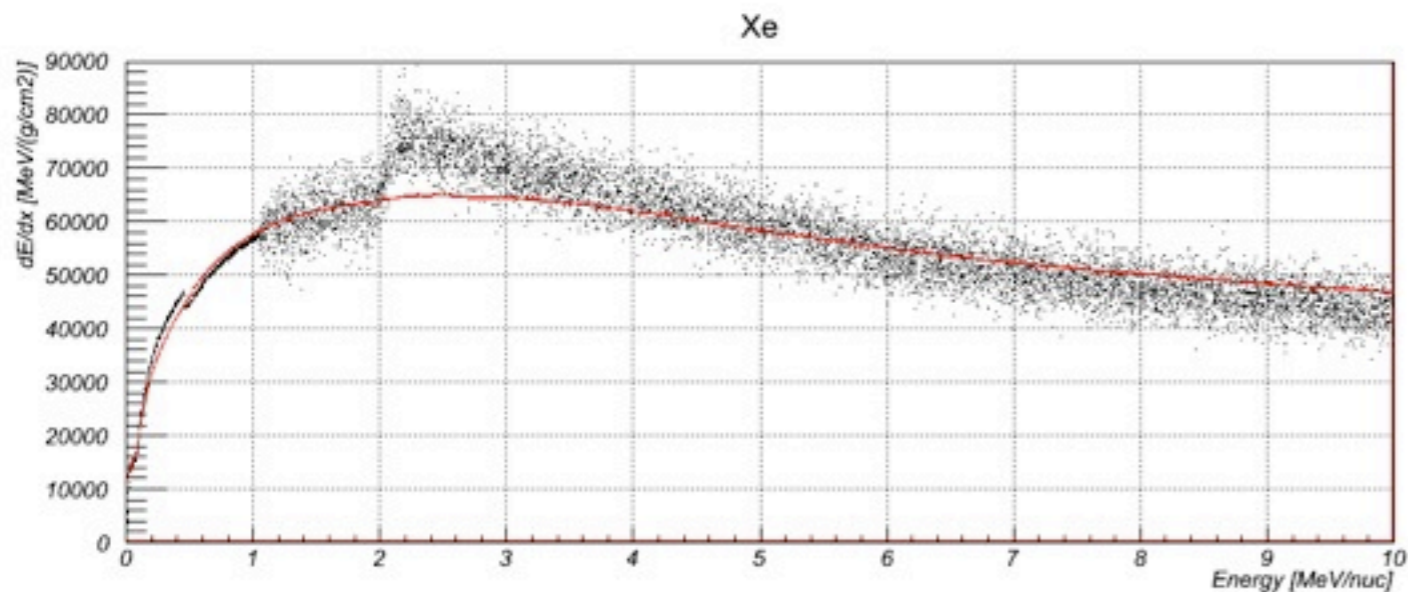
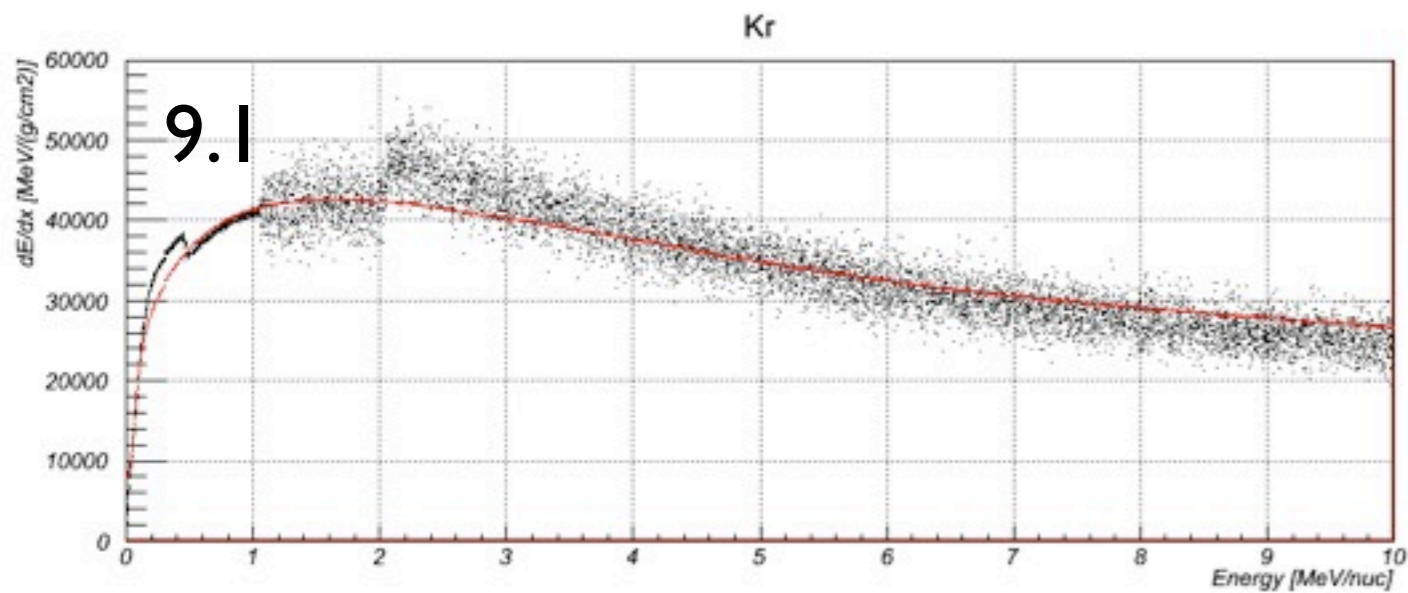
Parallel Session I-A (Mo 4th Oct 2010)

*Andreas Schälicke*

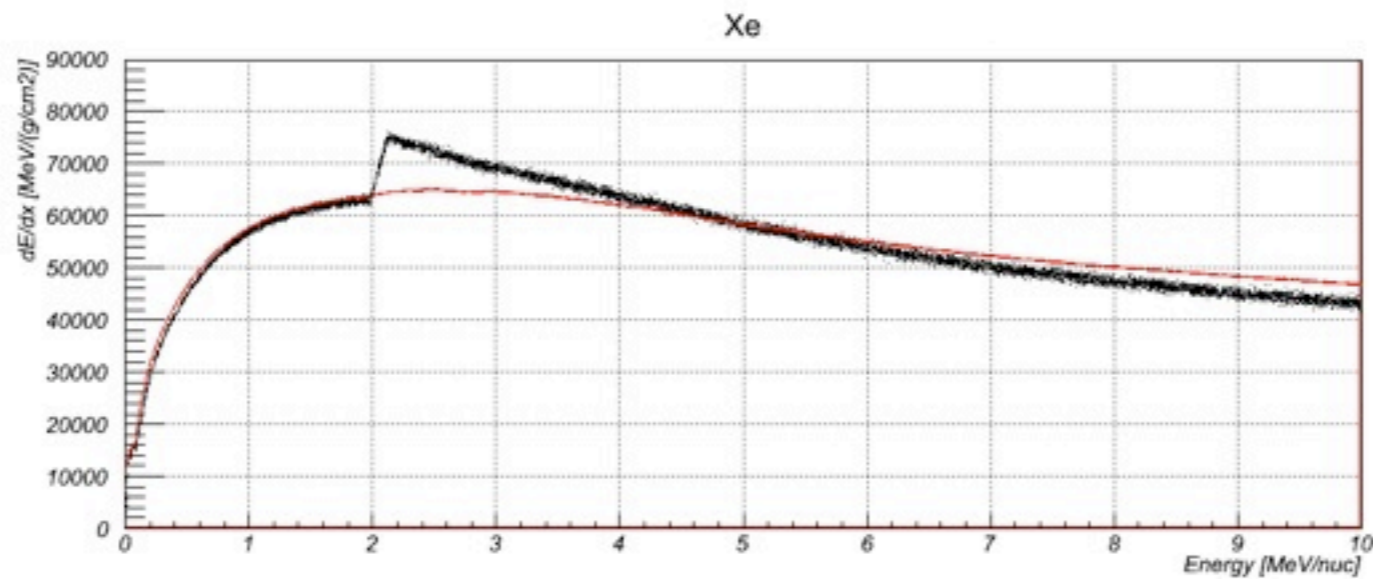
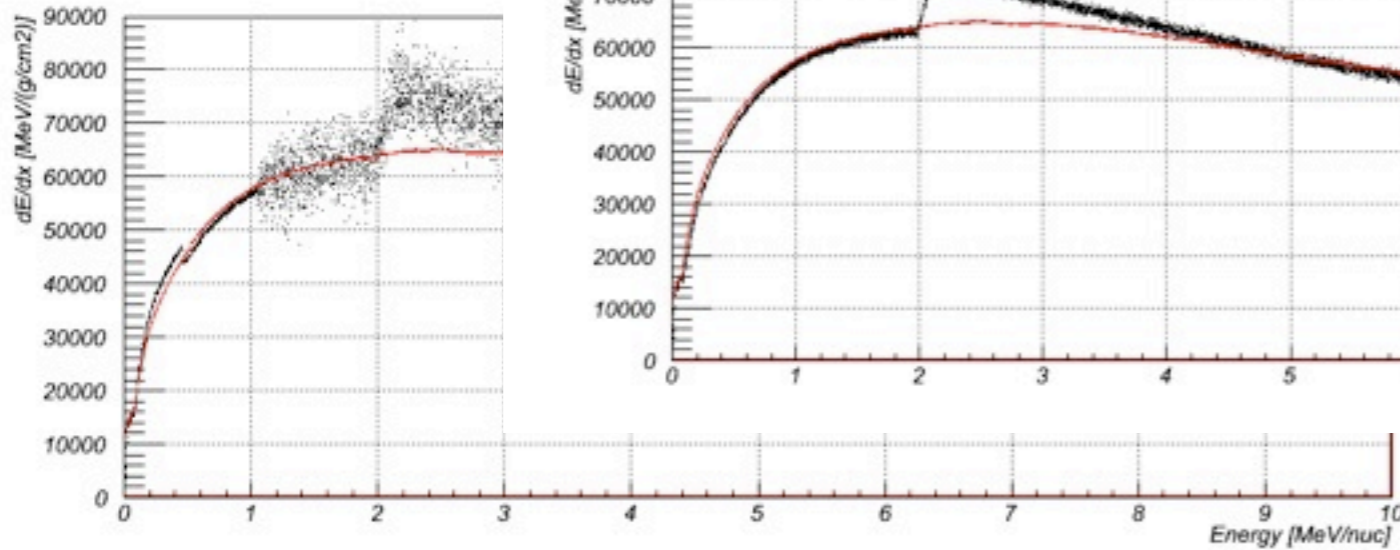
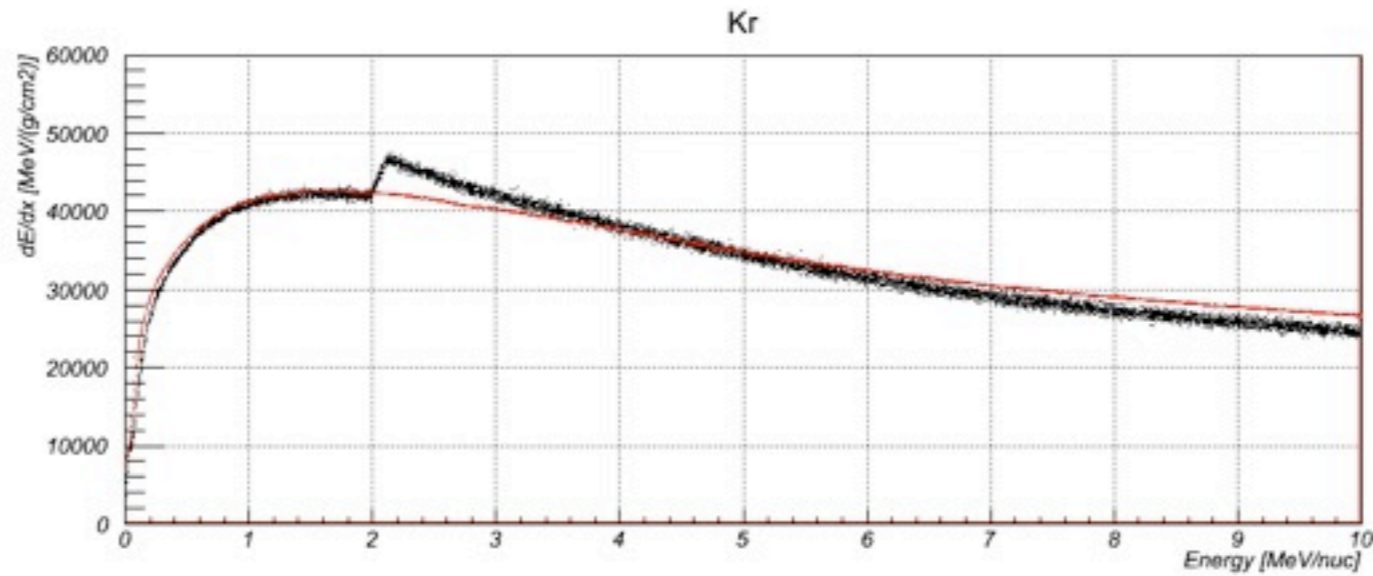
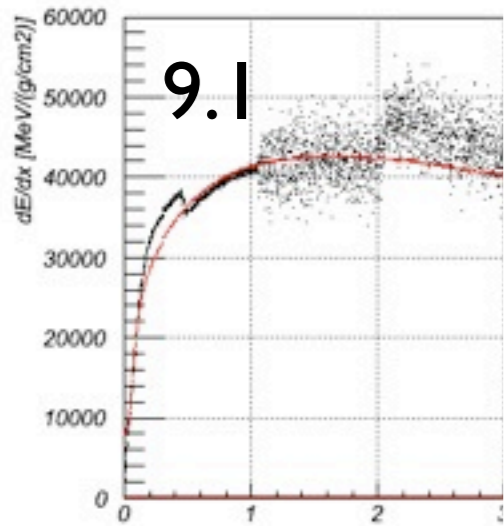
# Outline

- Problems and requirements of space users (Giovanni Santin)
- Simulation of Energy Deposition in Gases (Mary Tsagri)
- Fluctuation model upgrade (Michel Maire for Laszlo Urban)
- Validation of scattering models at high energies (Orjan Dale by phone)
- An first attempt to lower the delta rays production down to 50 eV (Jean-Etienne Sauvestre)
- Discussion

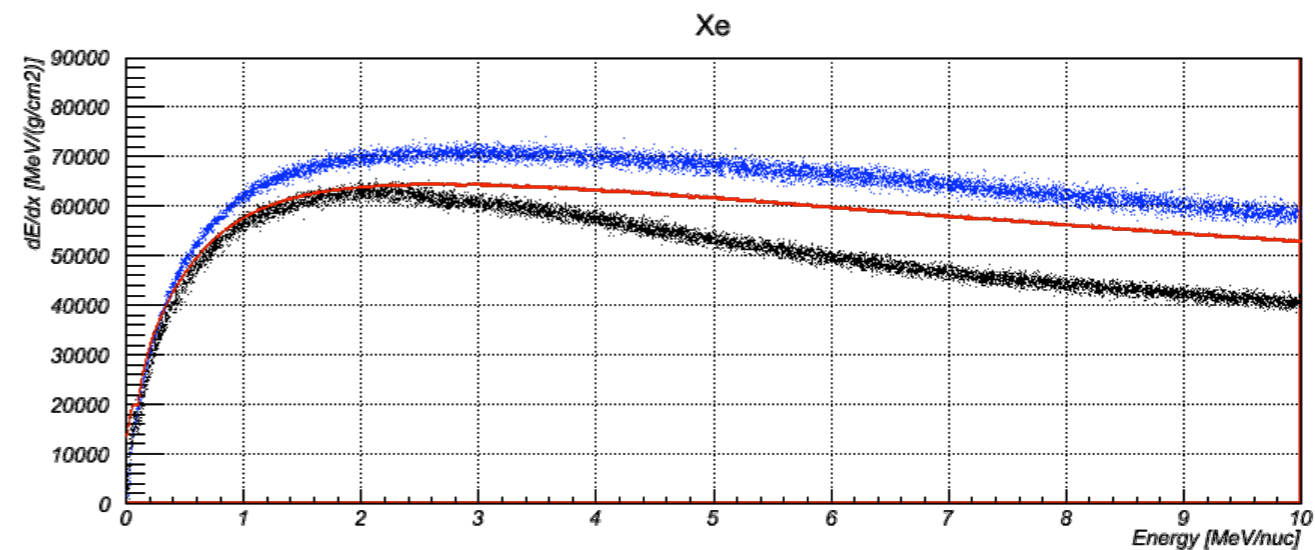
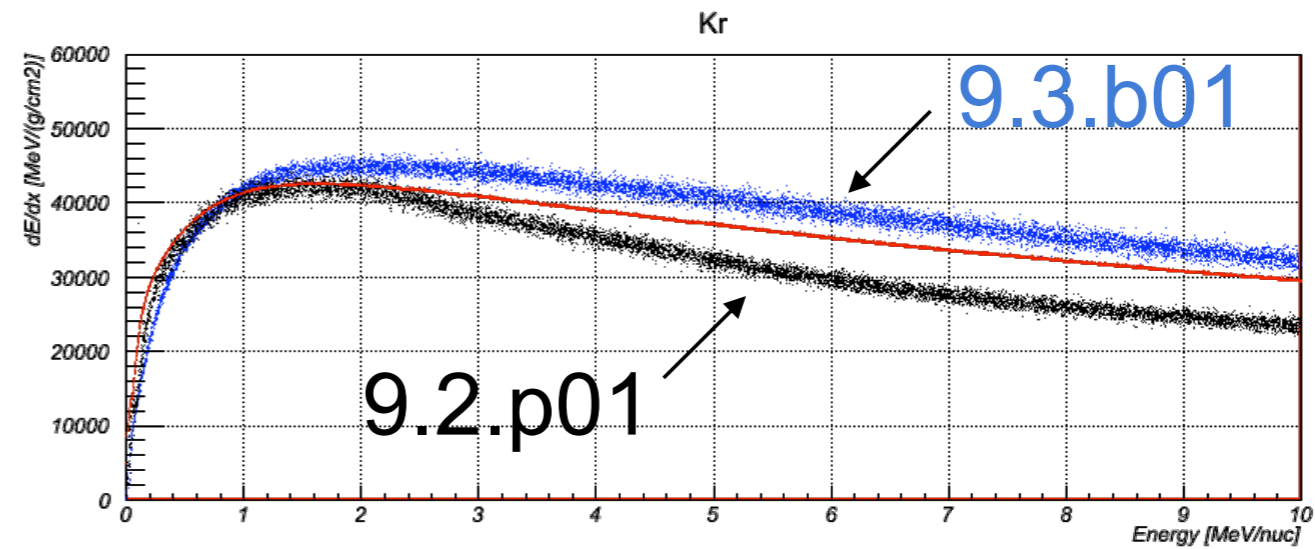
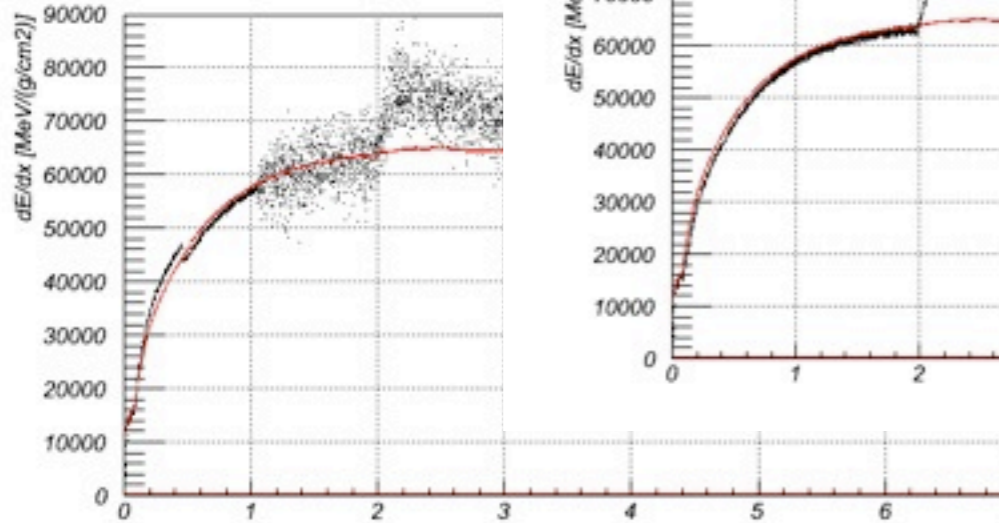
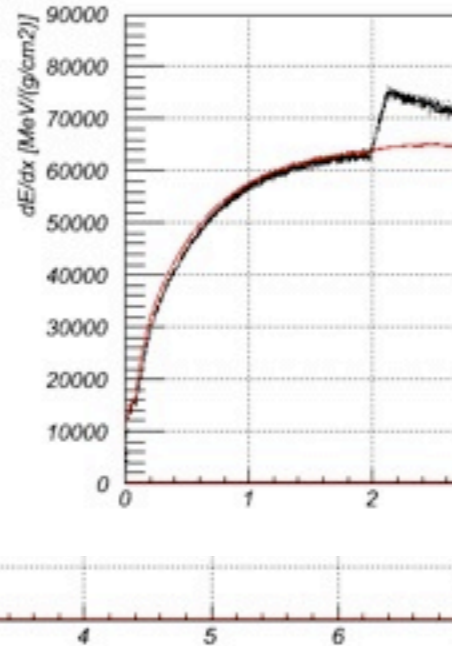
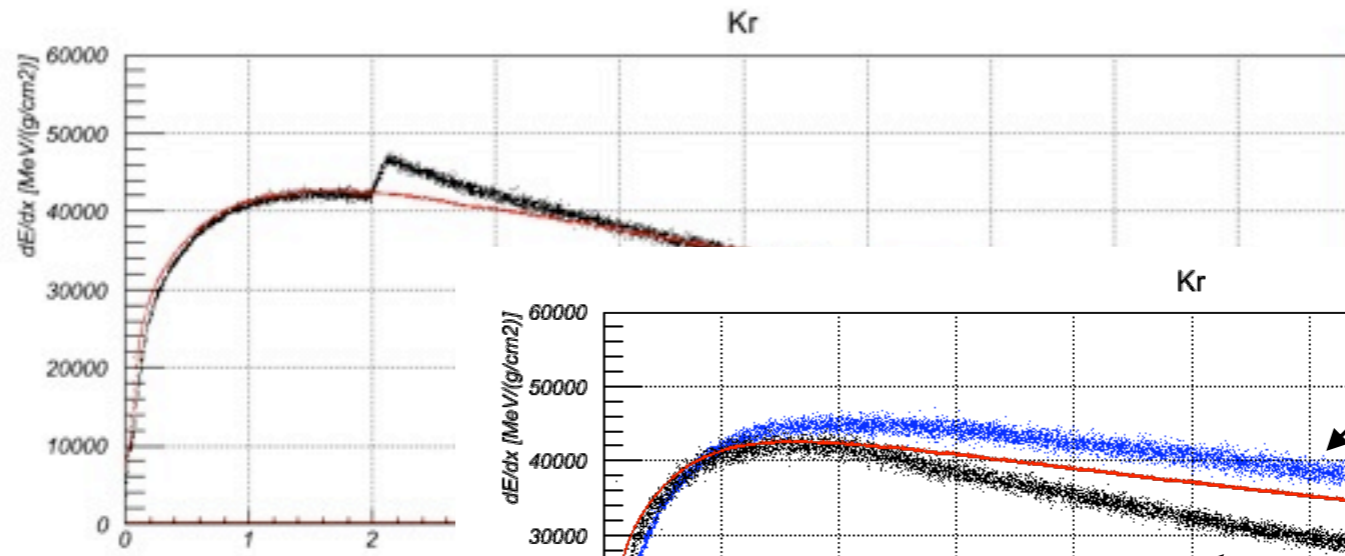
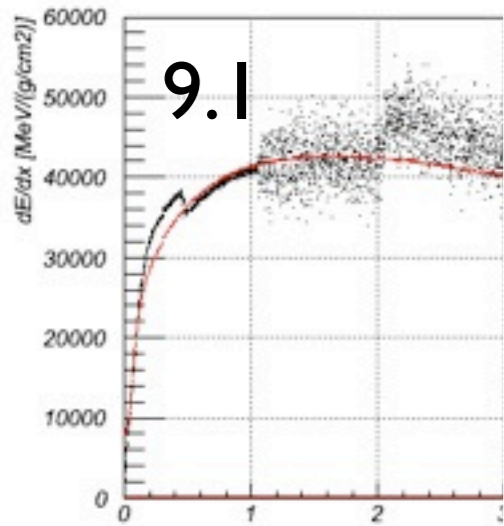
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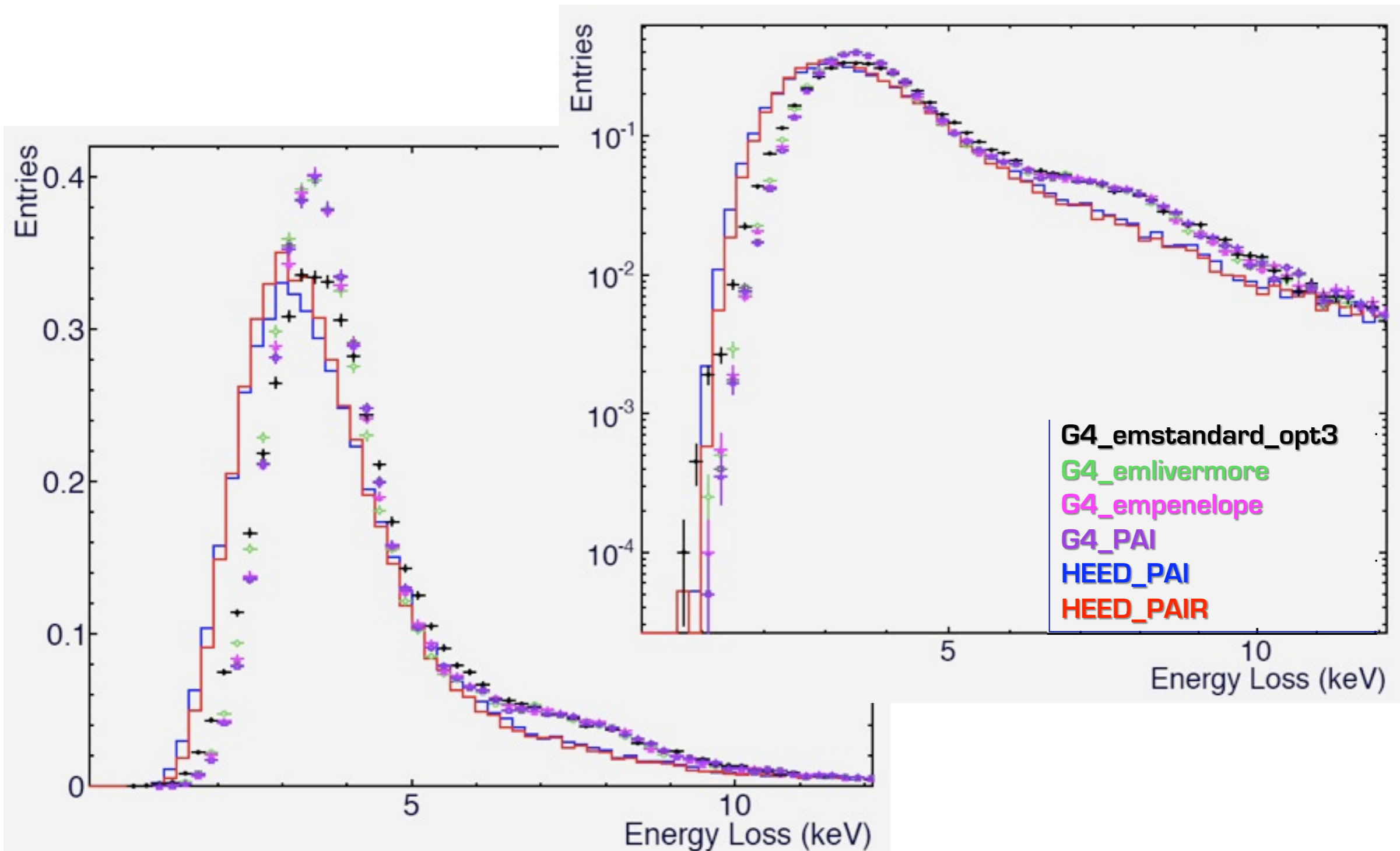
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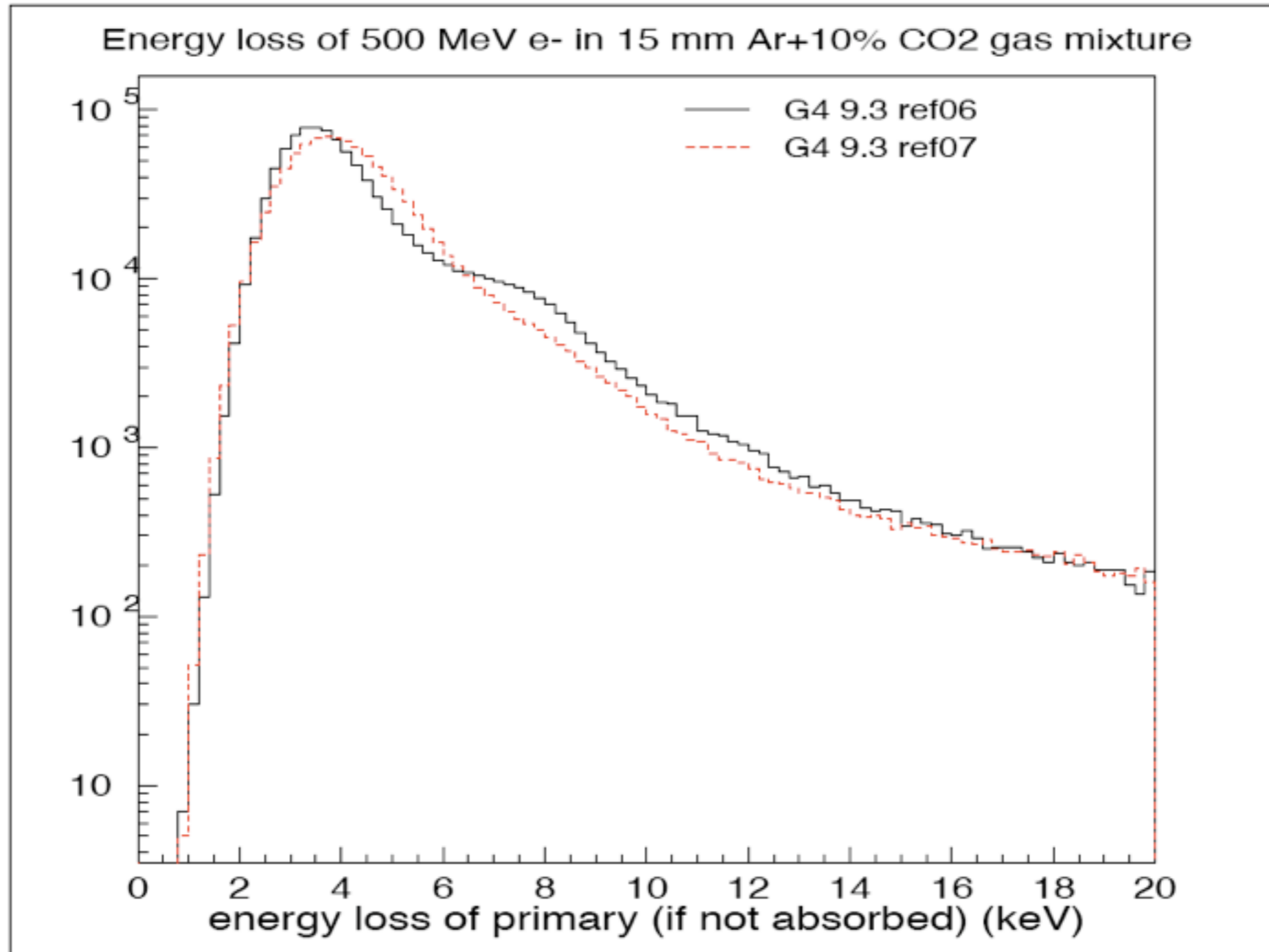
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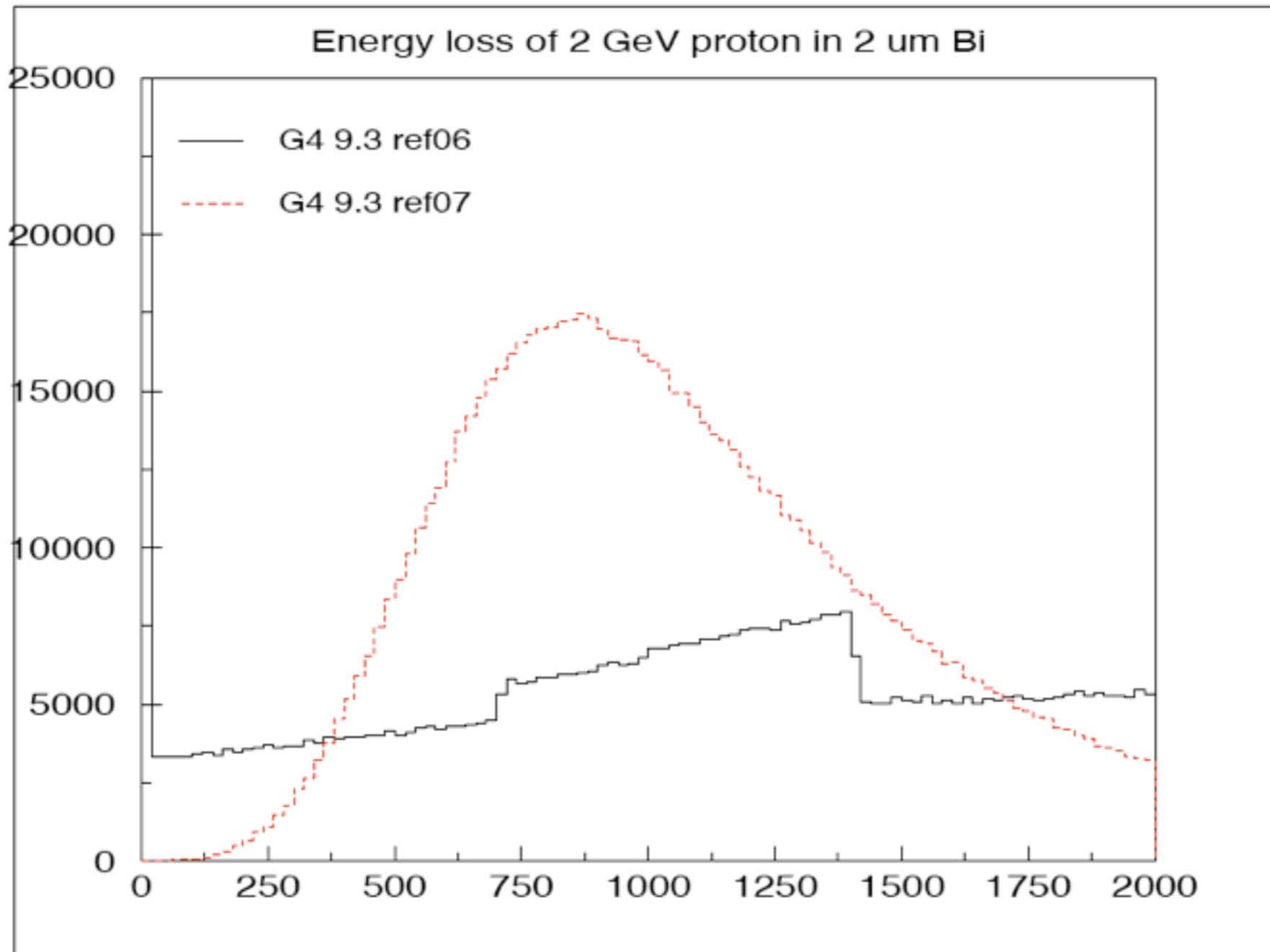
# Simulation of Energy Deposition in Gases (Mary Tsagri)



# Fluctuation model upgrade (Laszlo Urban)



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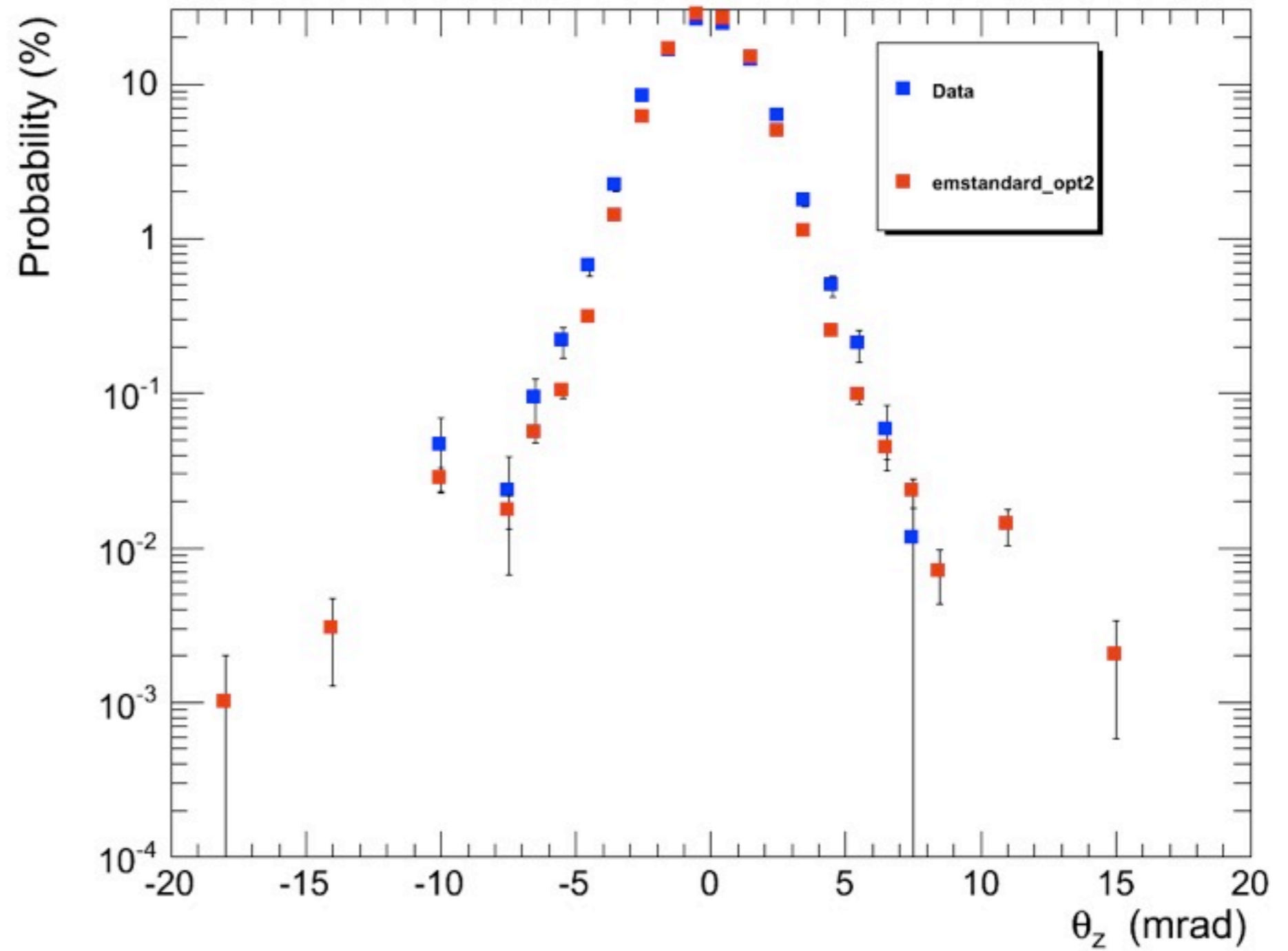




# Validation of scattering models at high energies (Orjan Dale by phone)

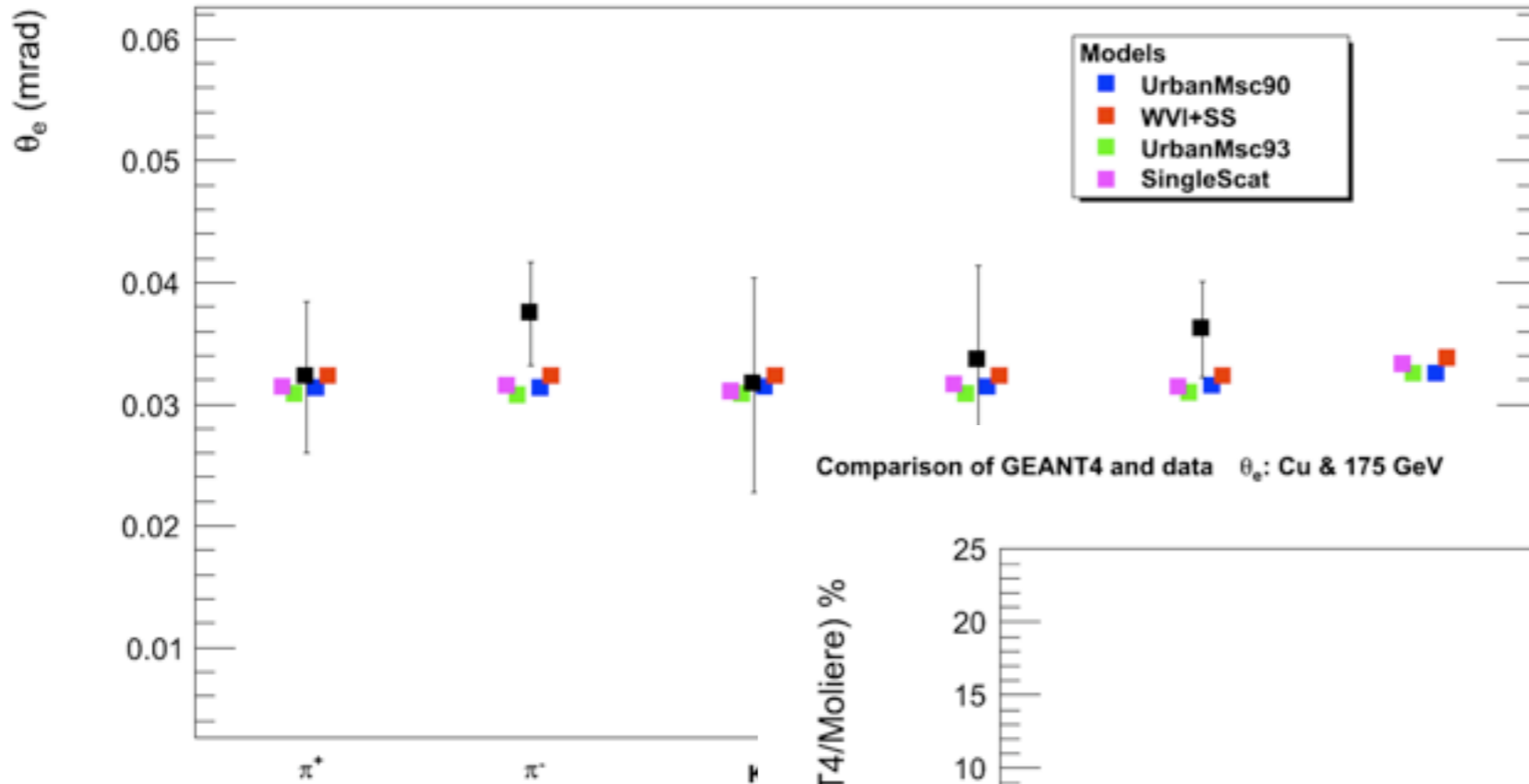
Probability for plane scattering angle  $\theta_z$ : 11.595 GeV & emstandard\_opt2

- Muons



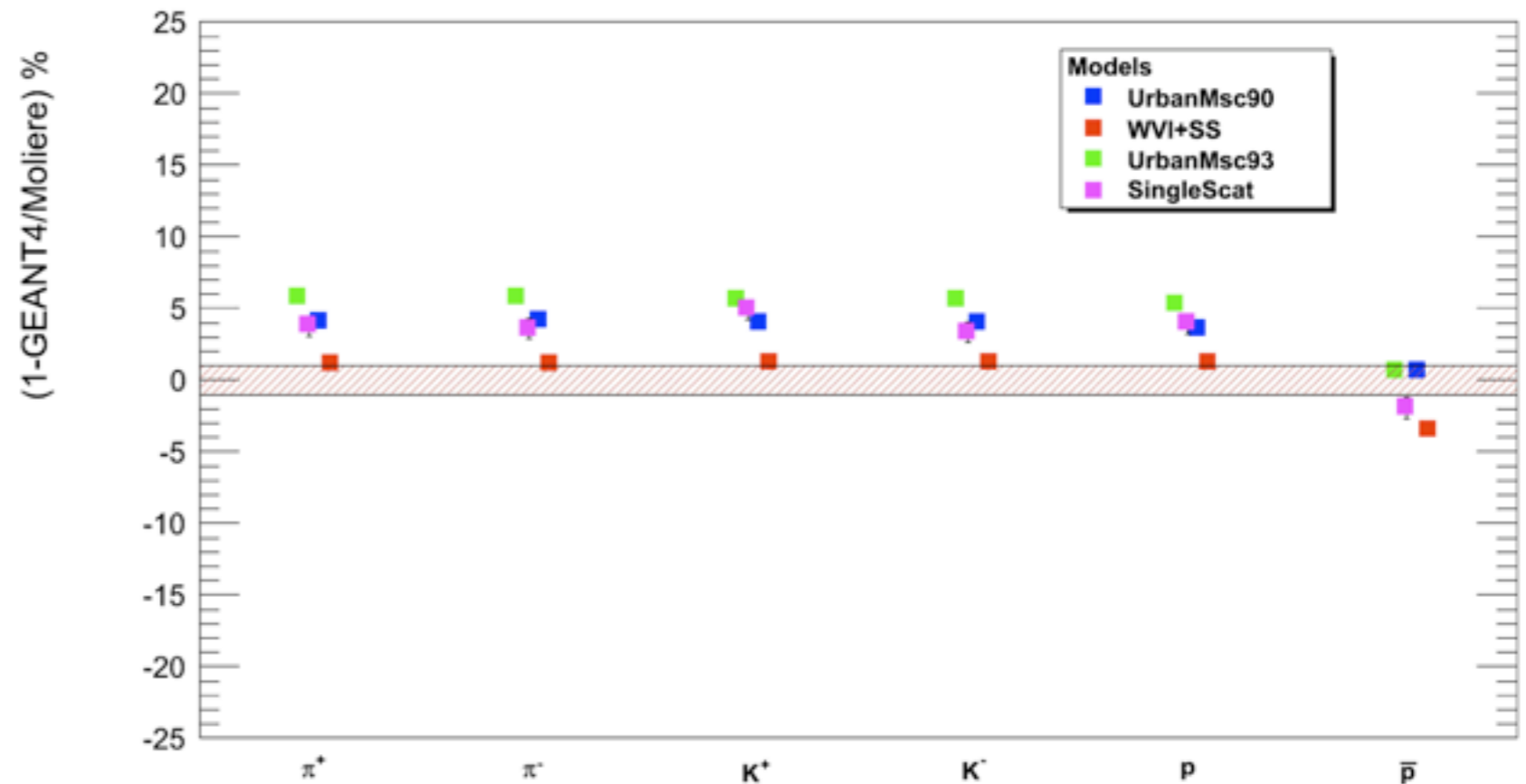
# Validation of scattering models at high energies (Orjan Dale by phone)

Comparison of GEANT4 and data  $\theta_e$ : Cu & 175 GeV



● Hadrons

Comparison of GEANT4 and data  $\theta_e$ : Cu & 175 GeV



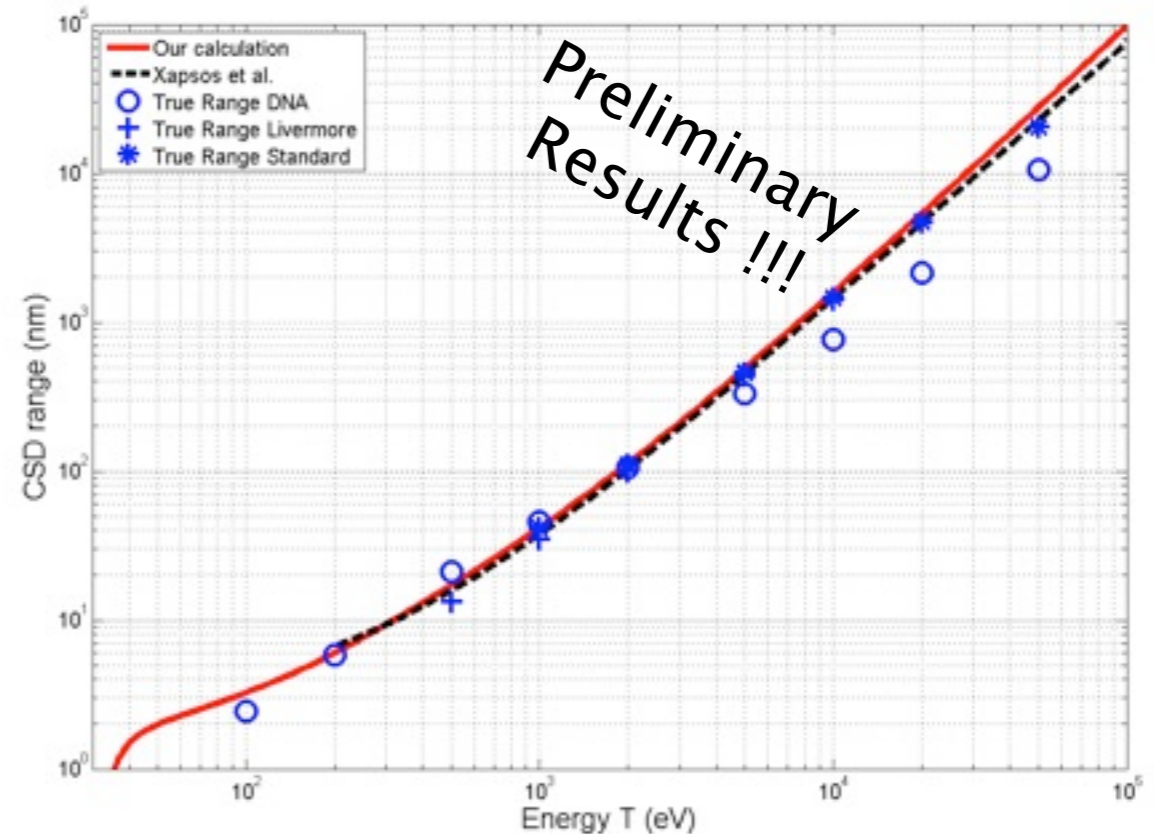
# Validation of scattering models at high energies (Orjan Dale by phone)

- Study of Msc Model with high energy muons and hadrons
- two Urban Models (90 and 93) give very **similar results** (may drop version 90)
- good agreement for angles up to 7 mrad (muons)
- more results available:

[http://www.ifh.de/geant4/web/verification5.php?sub=msc\\_test/](http://www.ifh.de/geant4/web/verification5.php?sub=msc_test/)

# An first attempt to lower the delta rays production down to 50 eV (Jean-Etienne Sauvestre)

- Systematic comparison Silicon-Geant4-DNA versus Penelope2008.
- Work will be done in collaboration with Vanderbilt University (R. Weller, R. Reed, M. Mendenhall).



The intermediate energy region from, 100 eV down to thermal carriers in the conduction band, is of course a hard and as yet not well studied regime, but that should not deter us from **doing the best that we can**, with the intent of **continuous improvement** as research progresses.