

**”Geant4 9.3.ref05 and Validation of Physics
Models with Kaon/Antiproton Interactions”**

Stefan Piperov

July 7, 2010

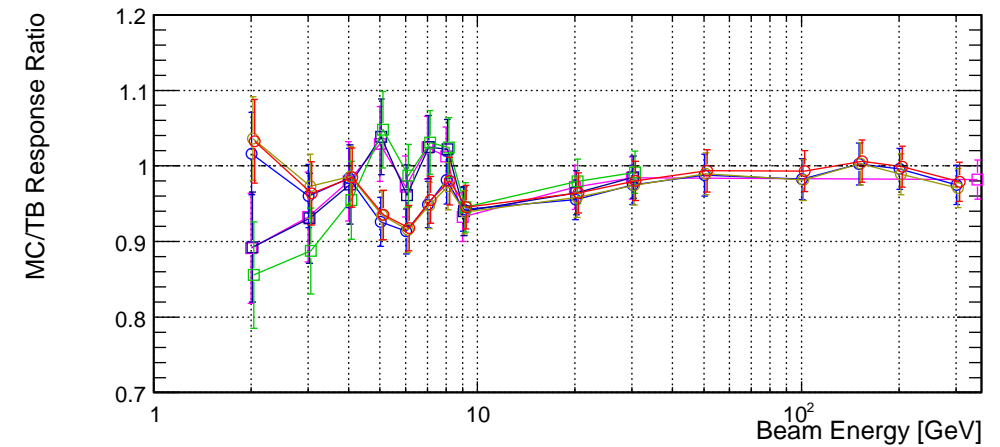
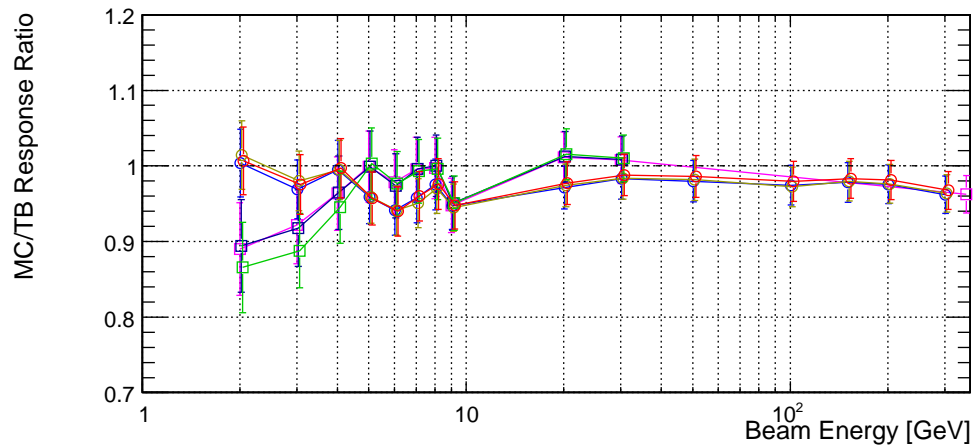
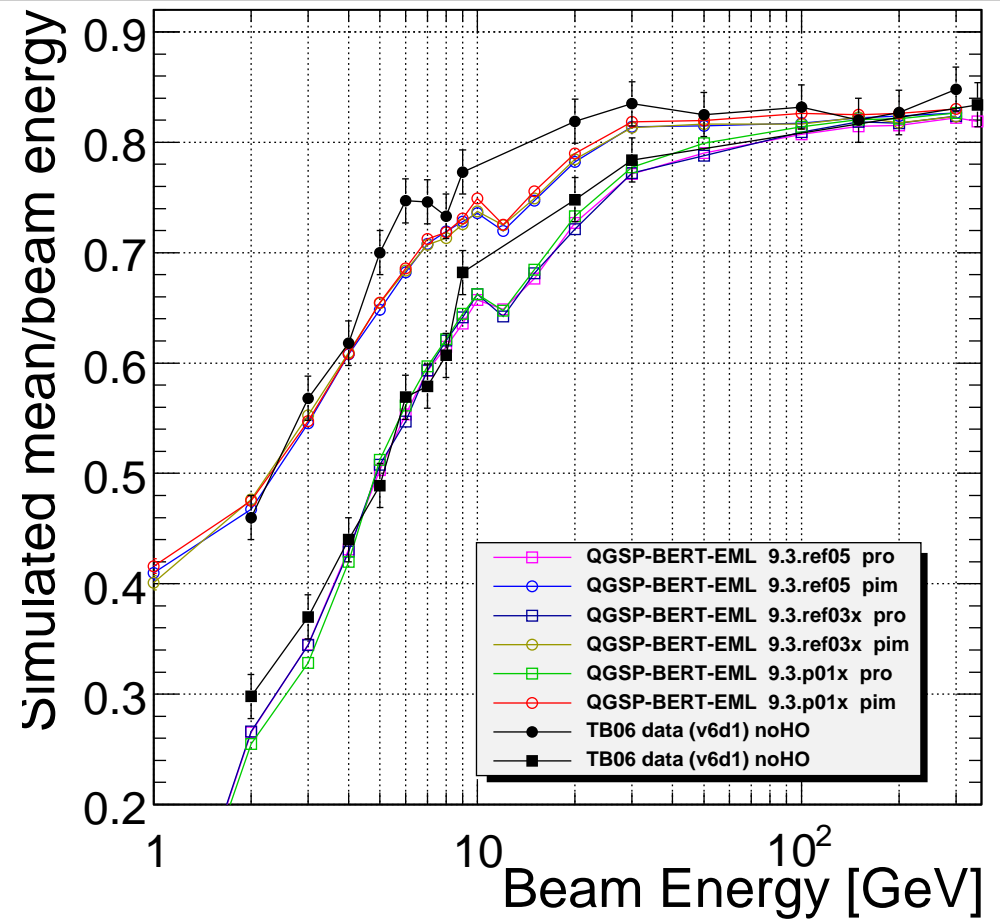
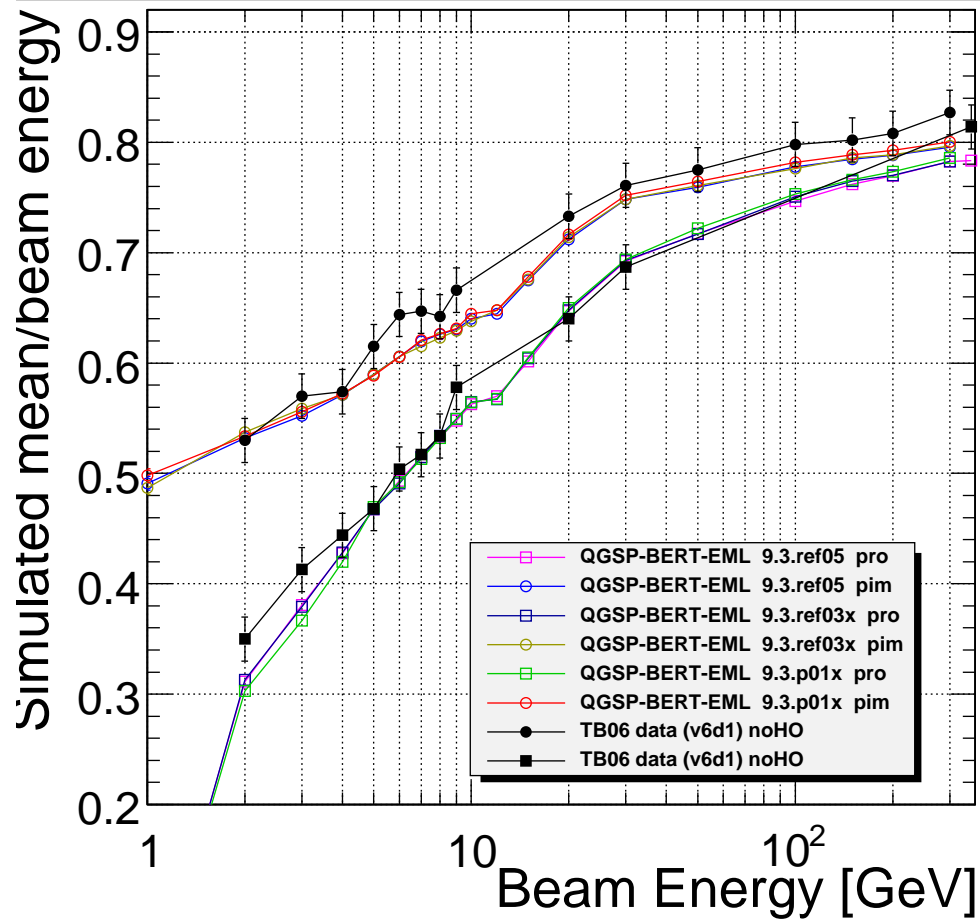
In this Report

- G4.9.3.ref05
 - and finally: 350GeV protons! ;)
- New CHIPS-based lists
- Comparison of Kaon and Anti-proton TB06 data with G4 simulation:
 - QGSP-BERT-EML
 - FTFP-BERT-EML
 - QGSP-FTFP-BERT-EML
 - CHIPS
 - QGSP-BERT-CHIPS
 - QGSP-BERT-CHIPS-EML

response

QGSP-BERT-EML

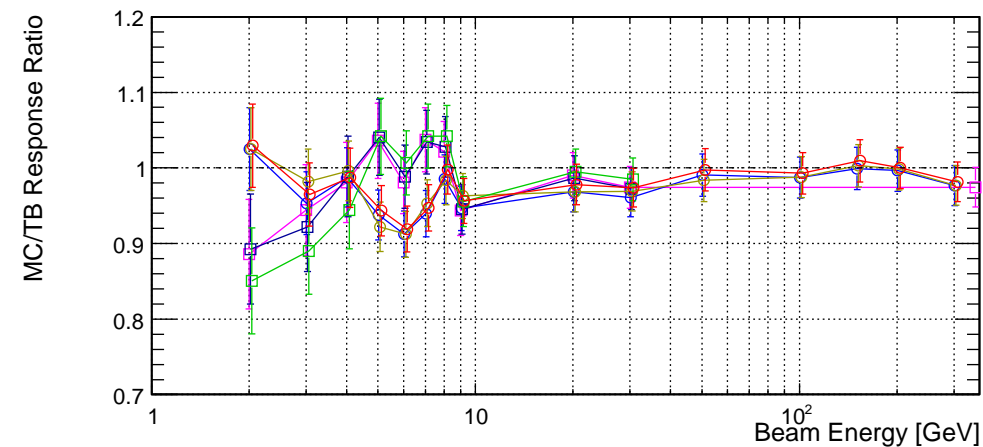
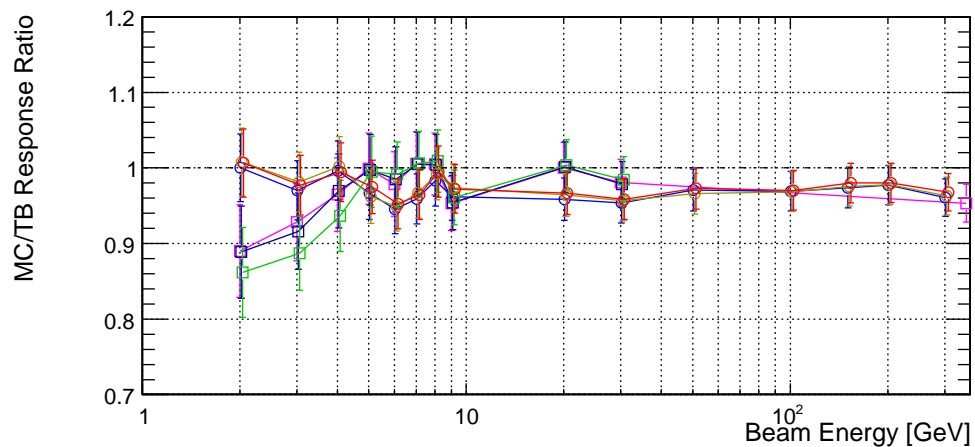
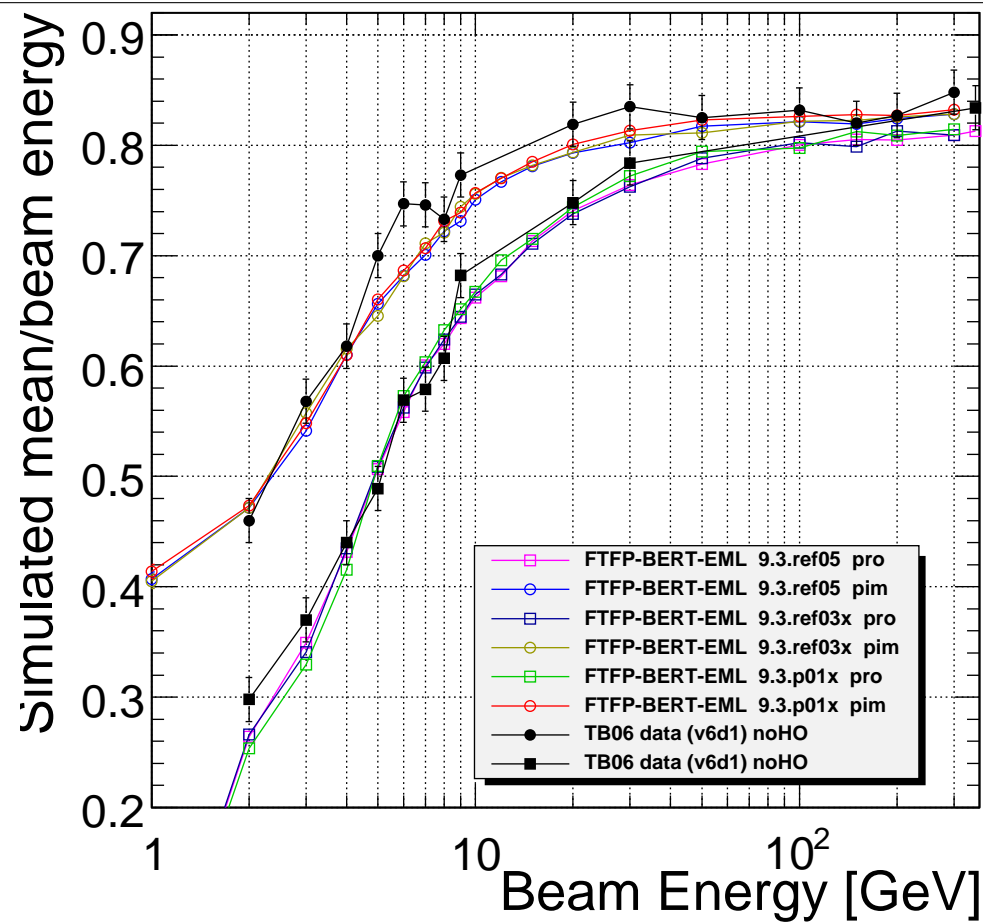
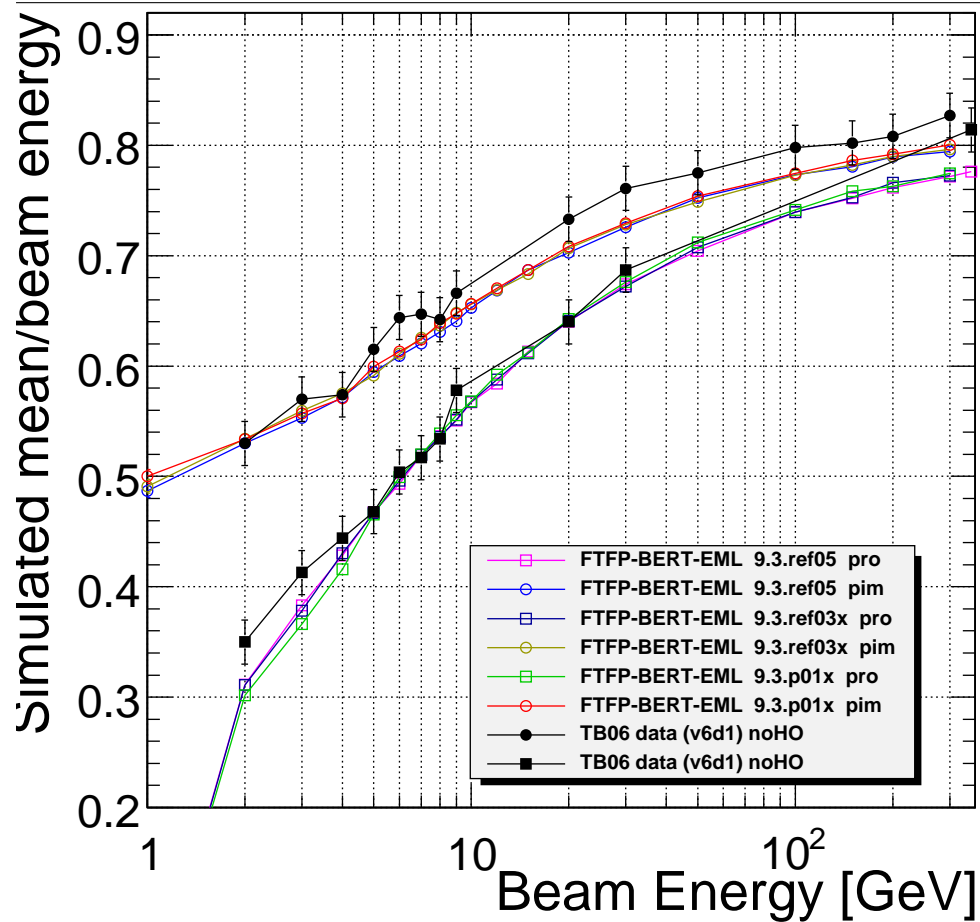
G4.9.3.p01,-ref03,-ref05



response

FTFP-BERT-EML

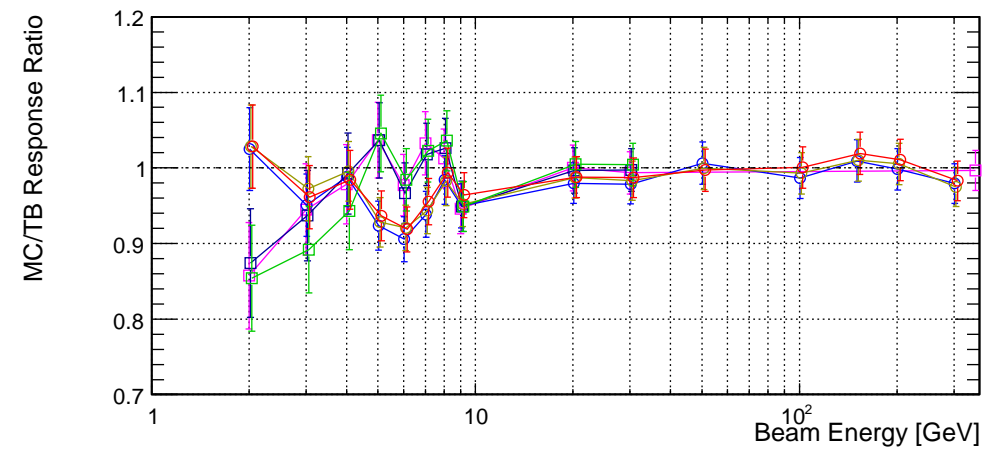
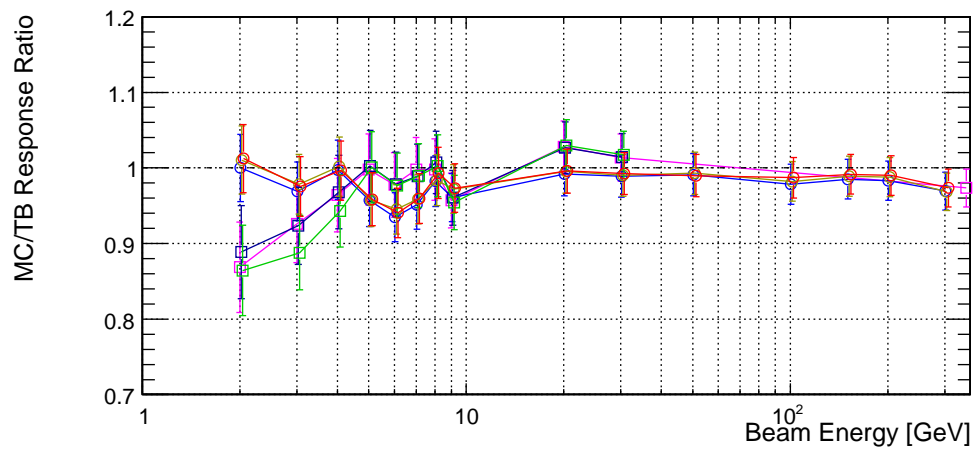
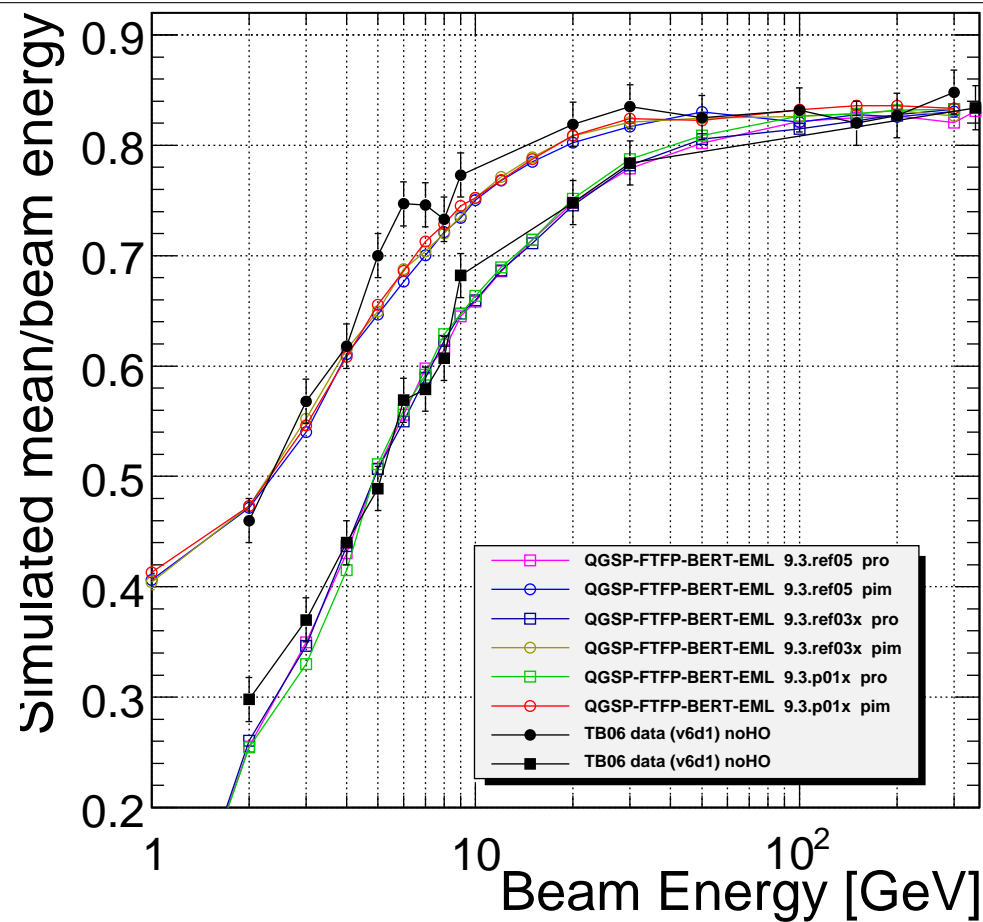
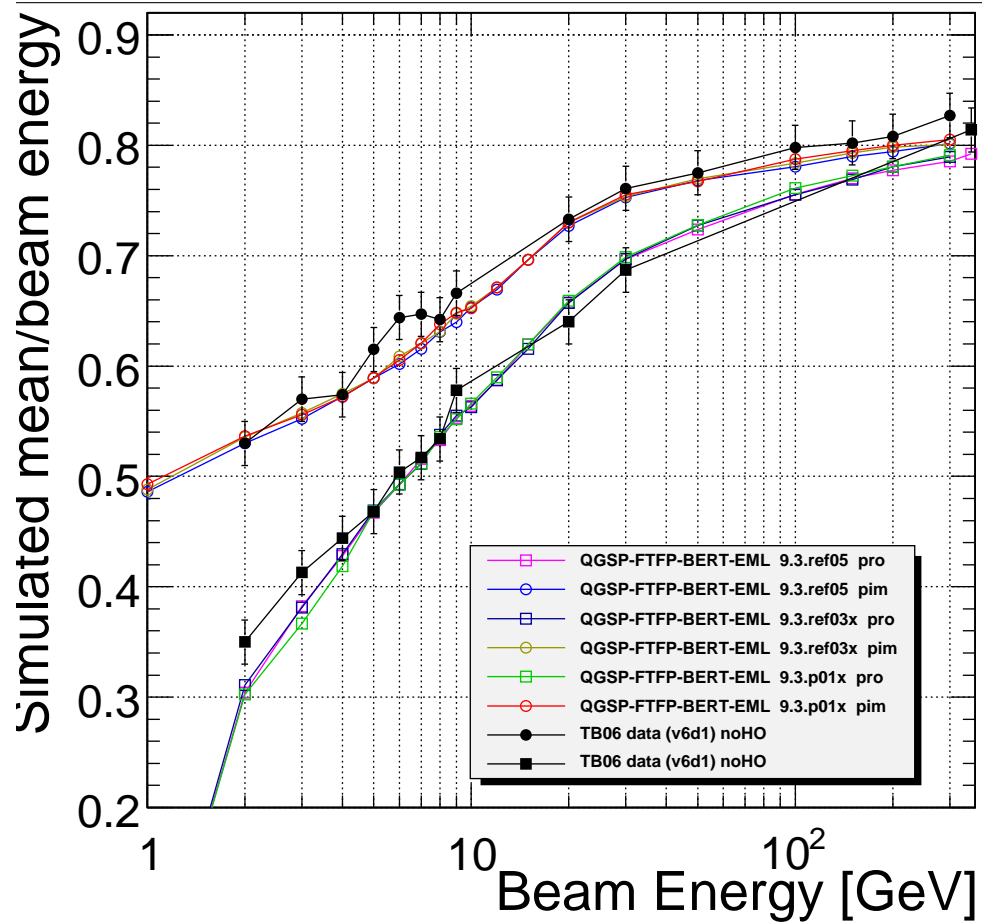
G4.9.3.p01,-ref03,-ref05



response

QGSP-FTFP-BERT-EML

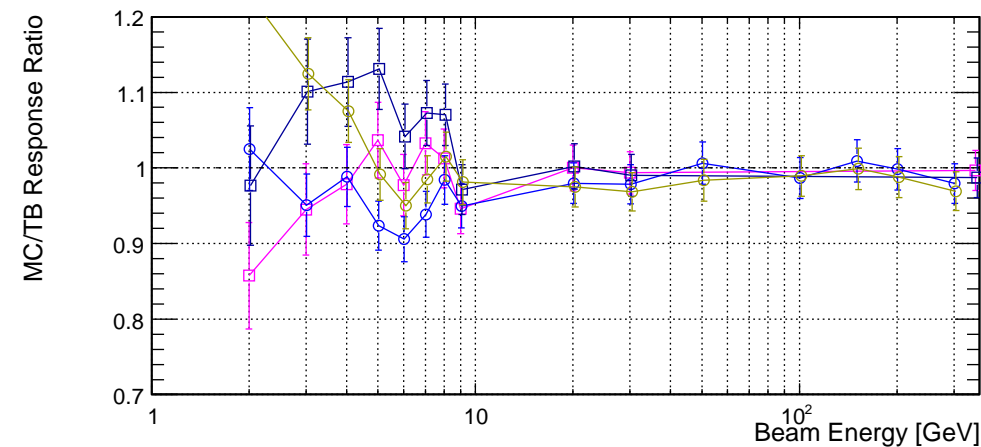
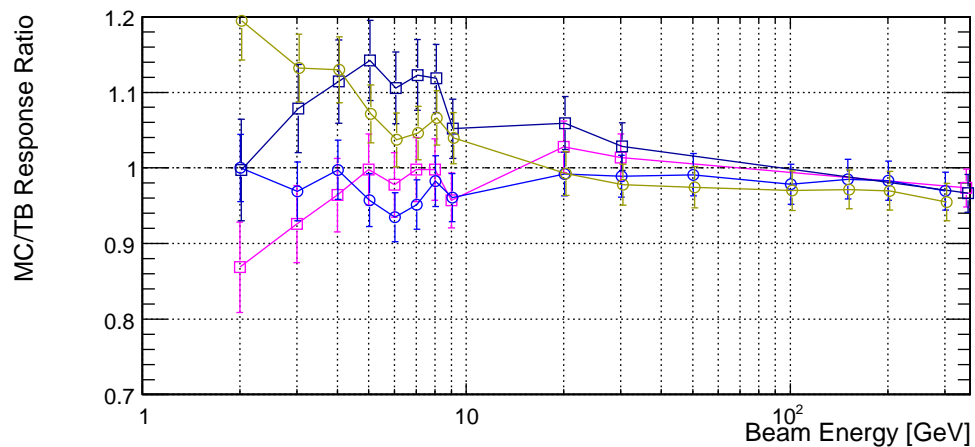
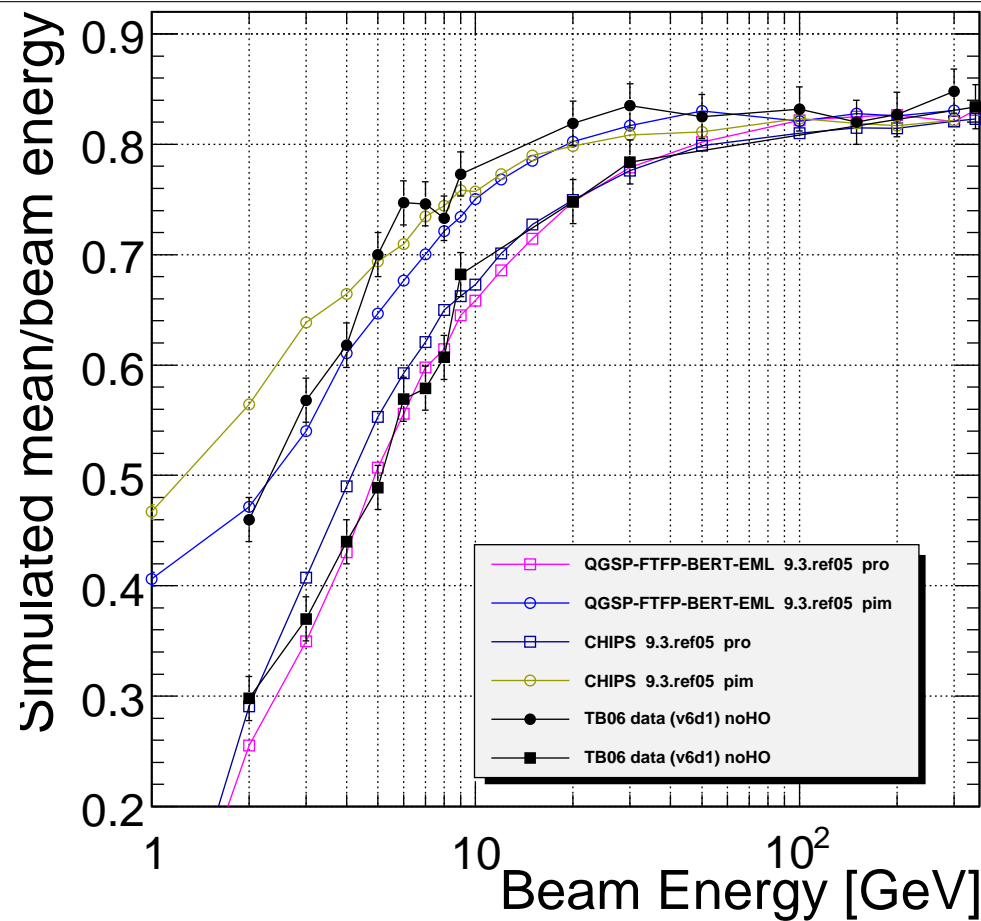
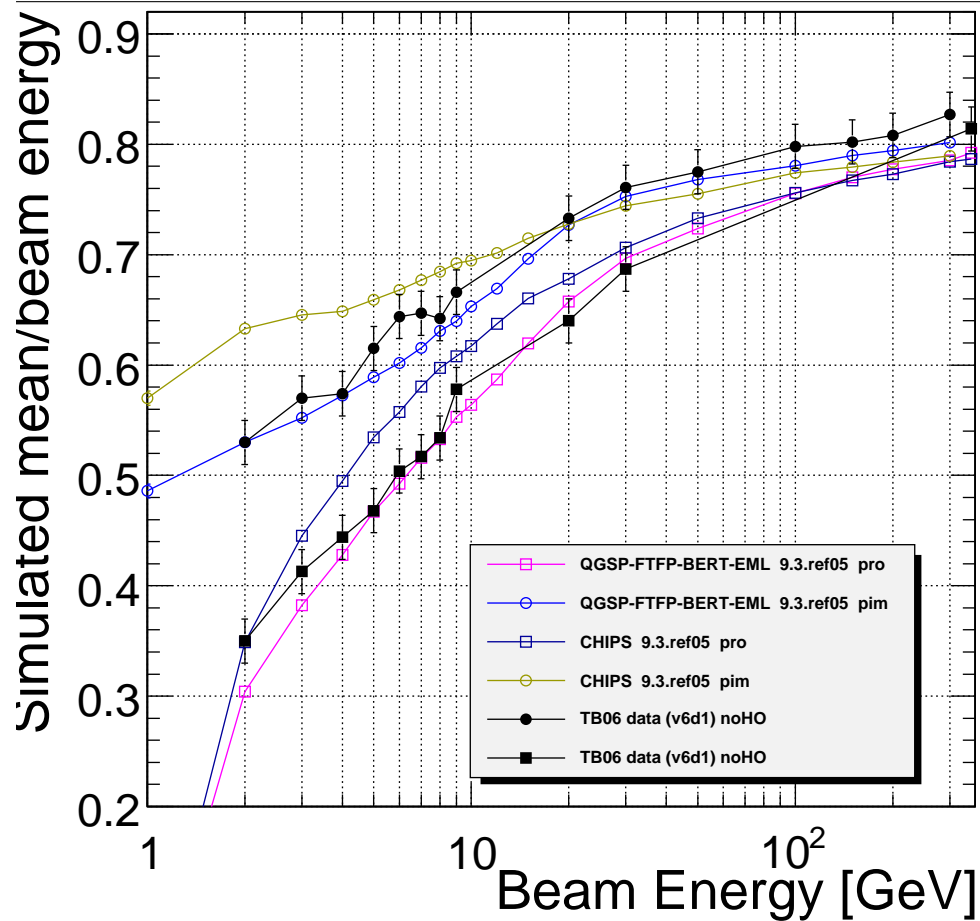
G4.9.3.p01,-ref03,-ref05

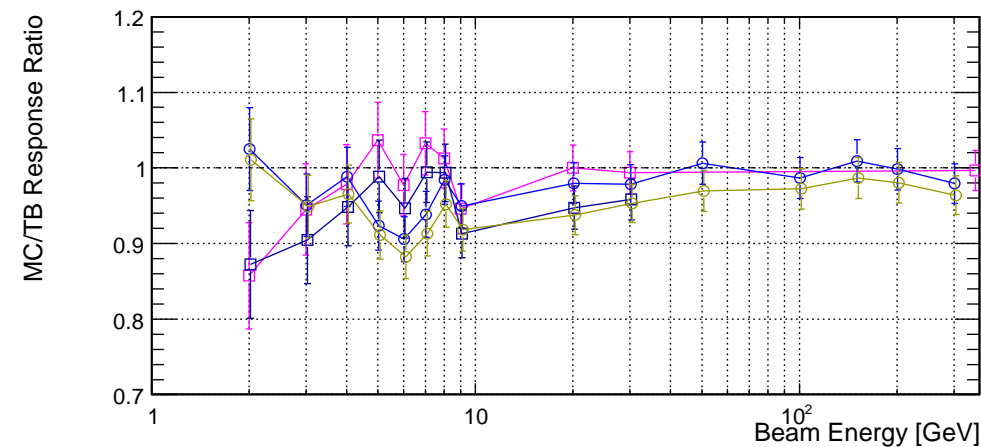
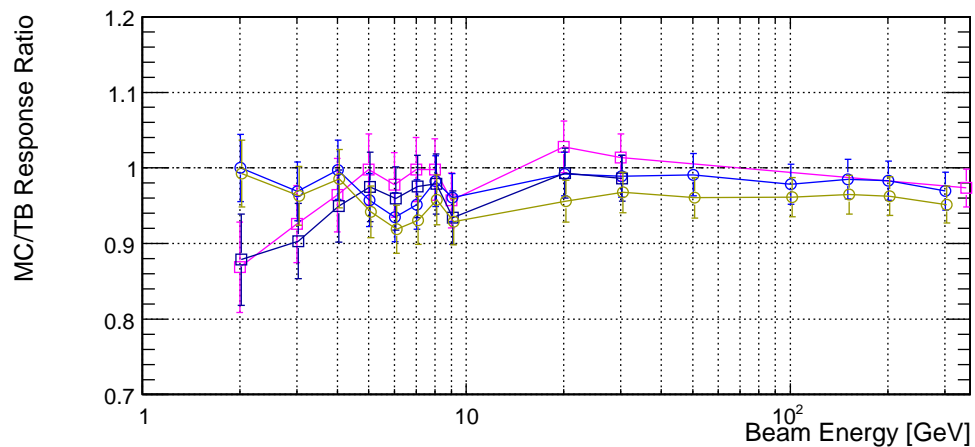
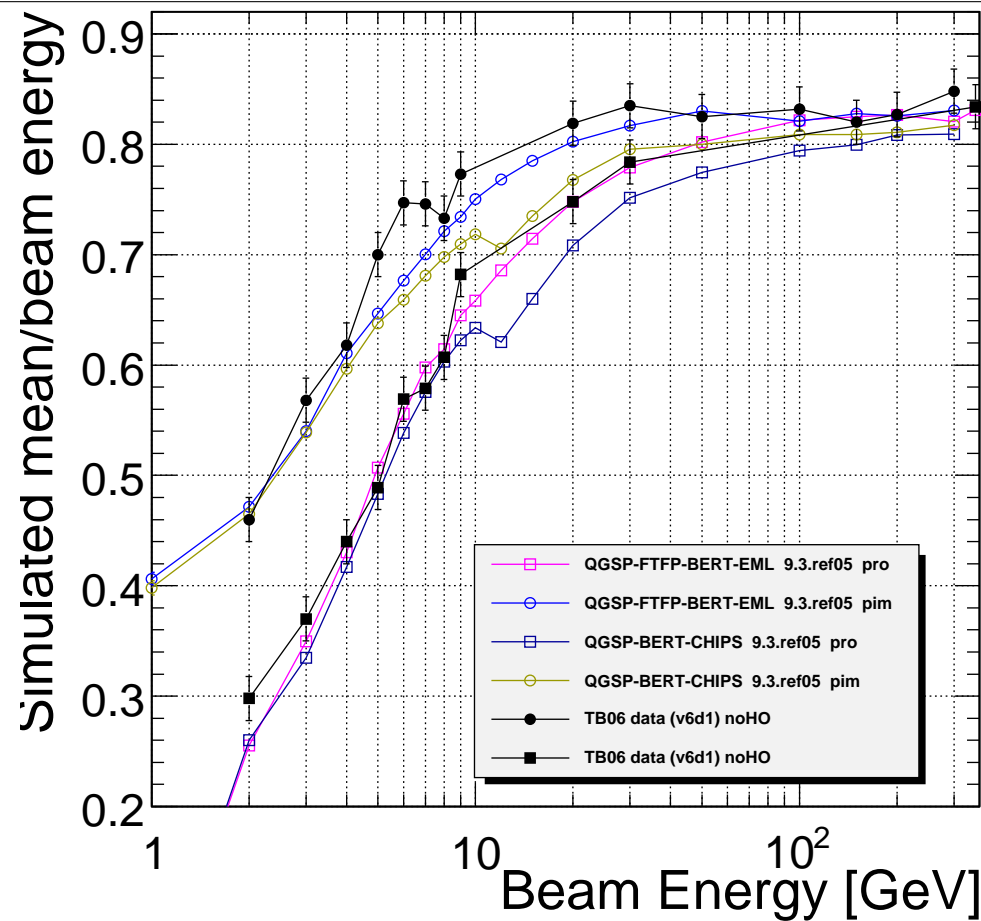
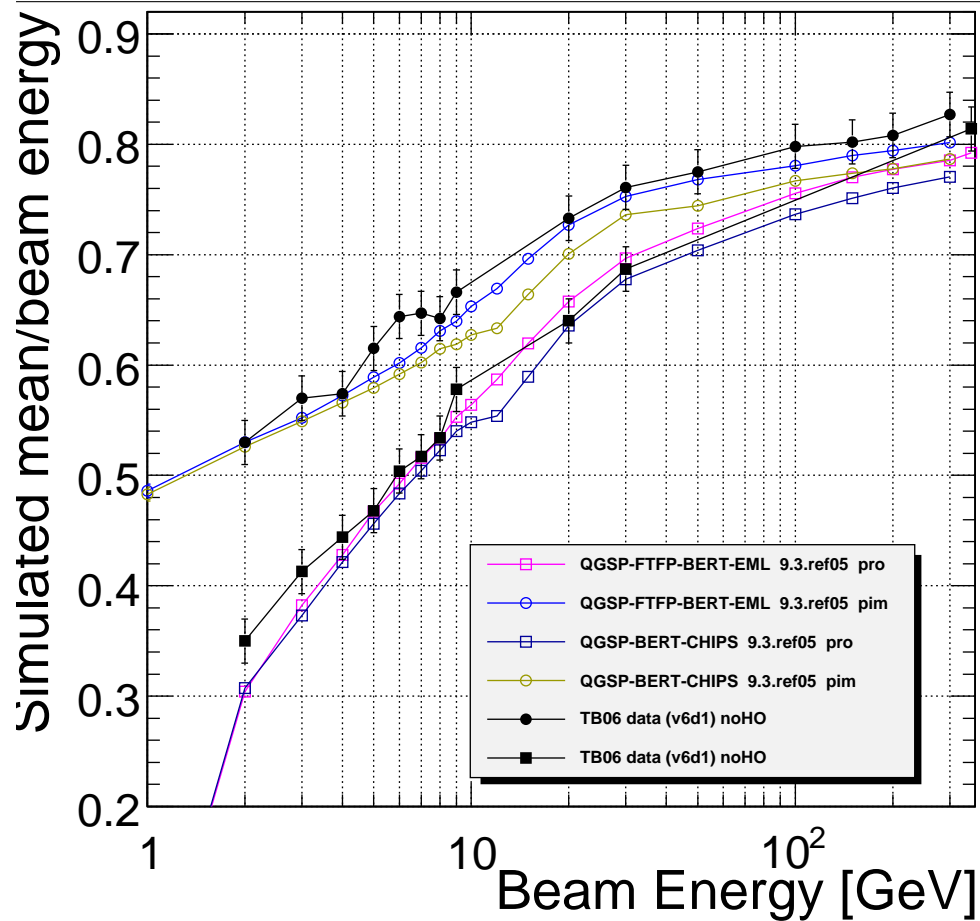


response

CHIPS vs QGSP-FTFP-BERT-EML

G4.9.3.ref05

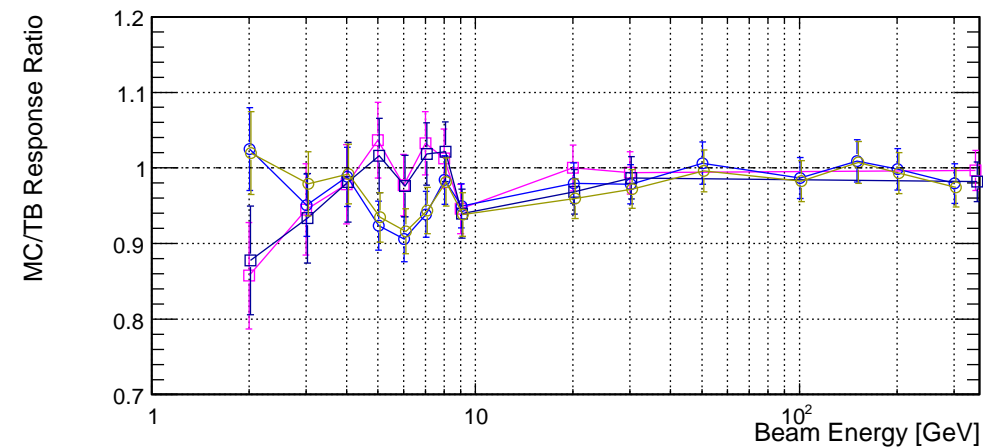
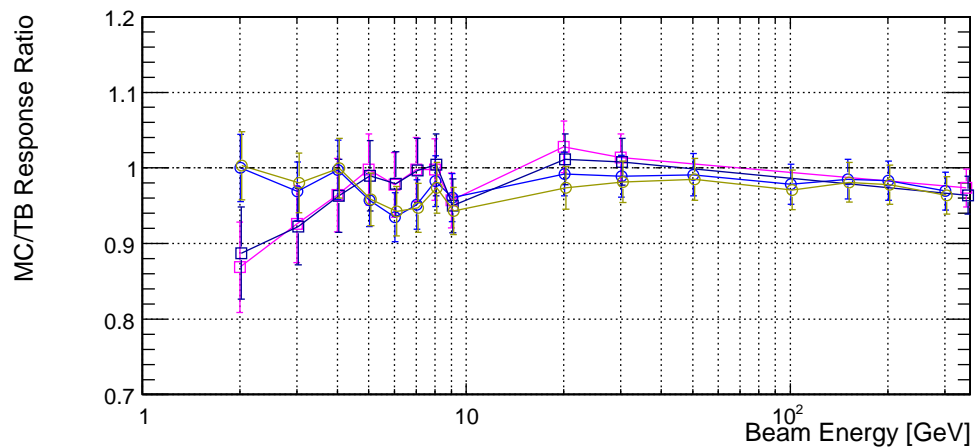
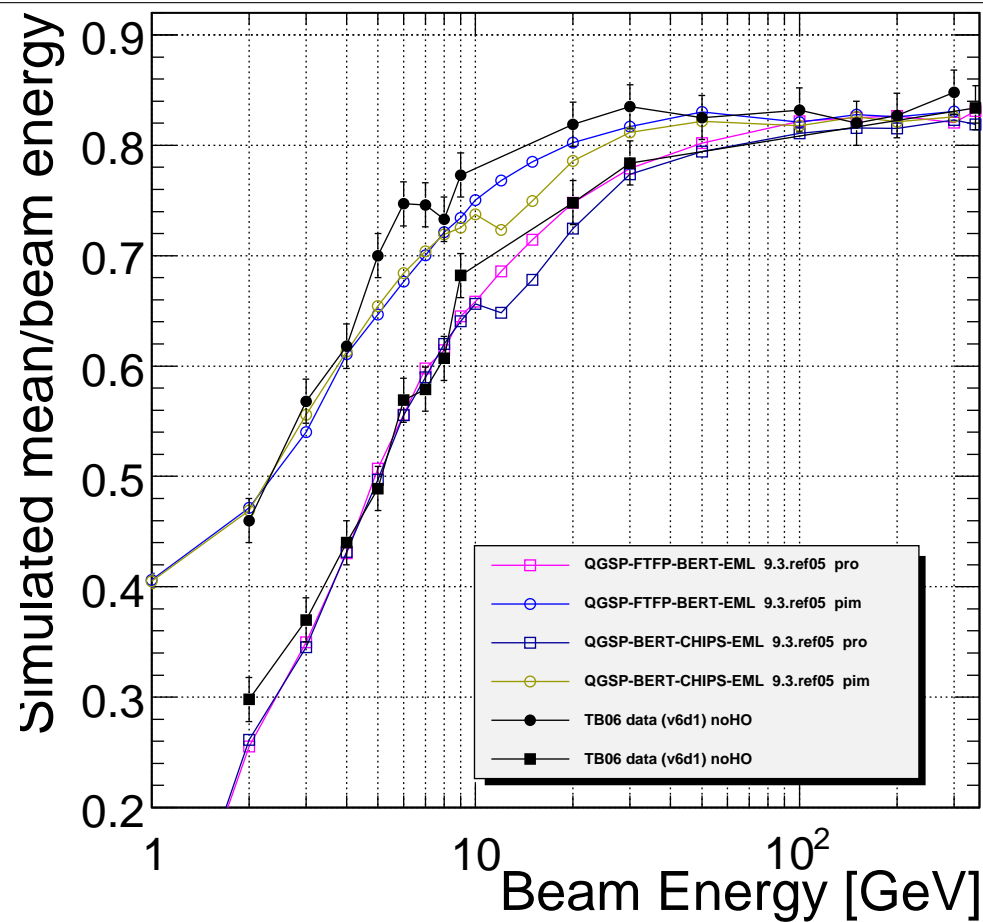
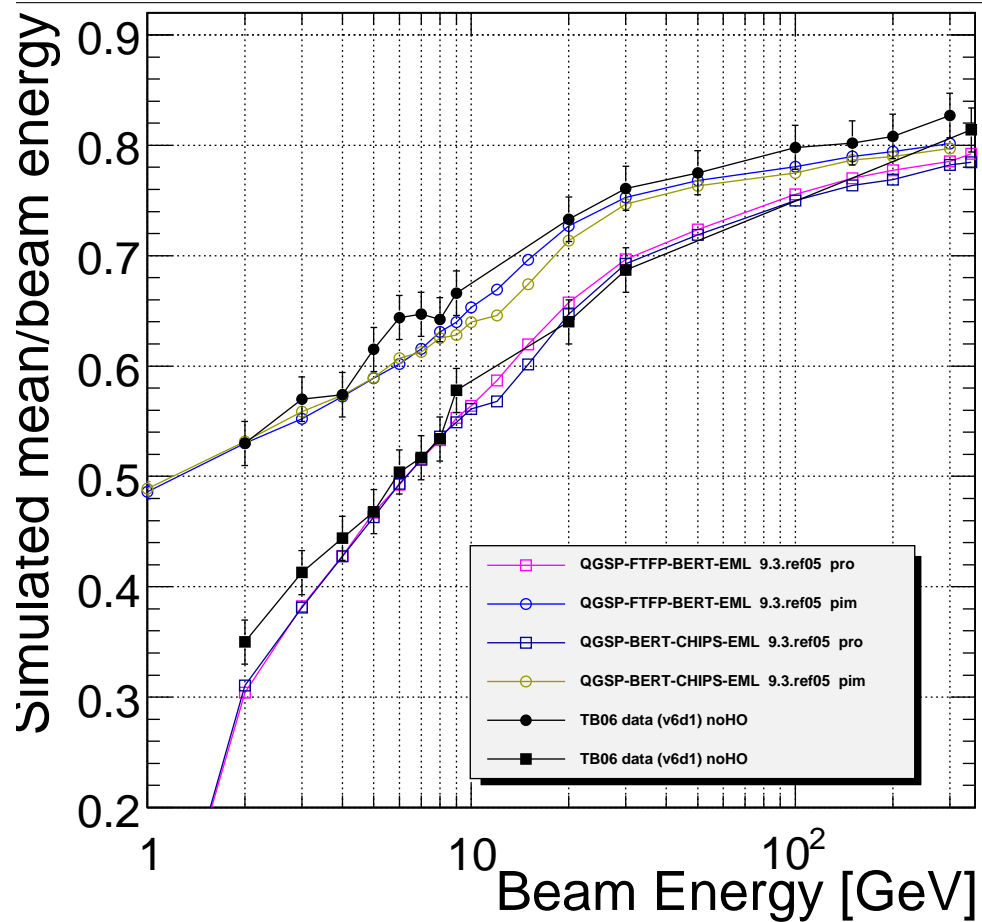


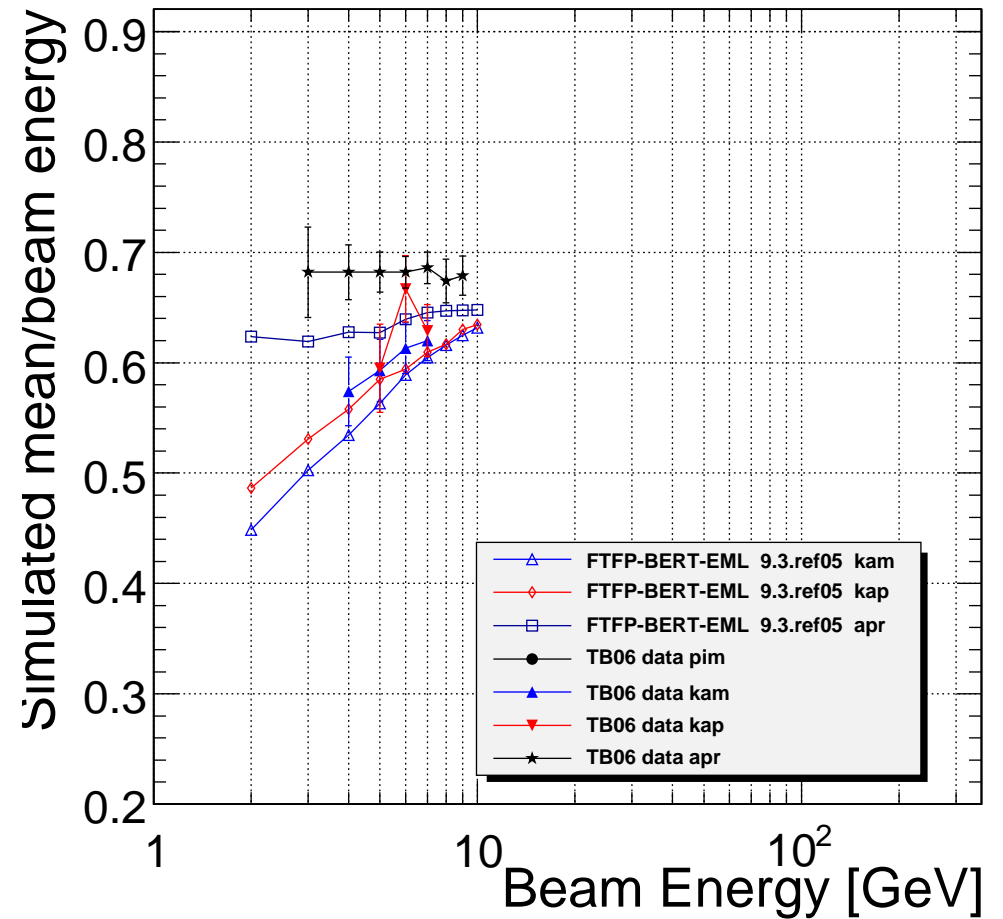
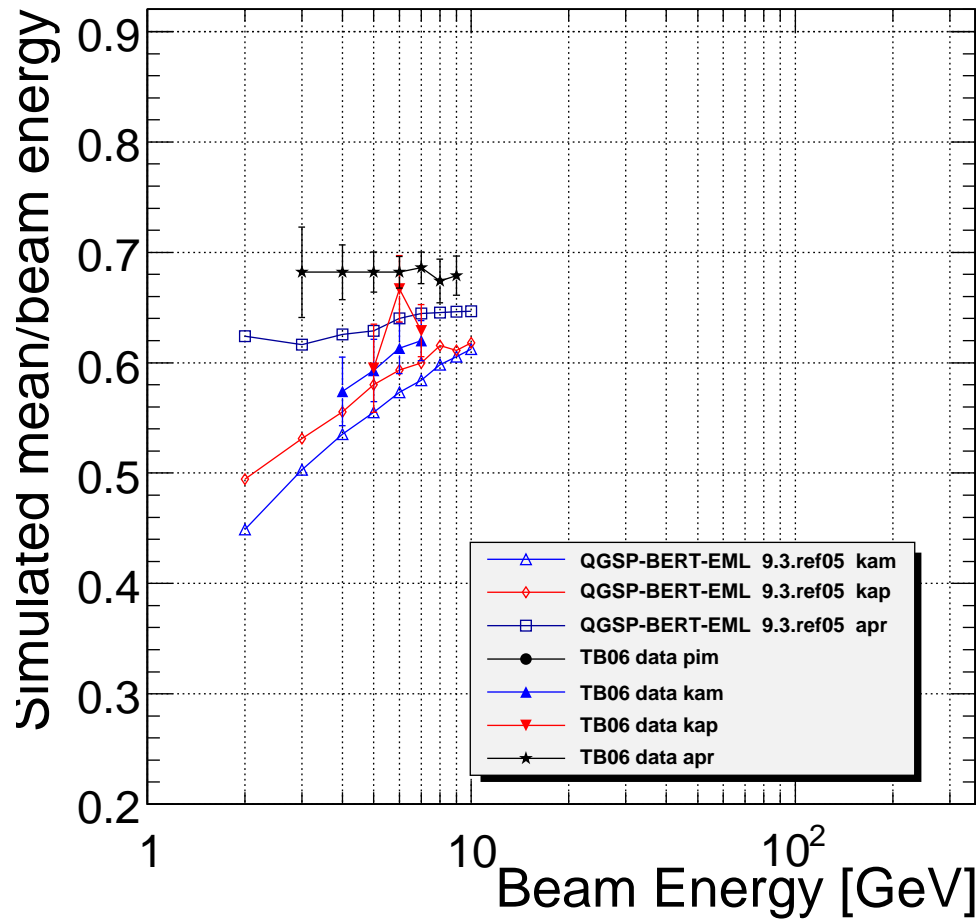


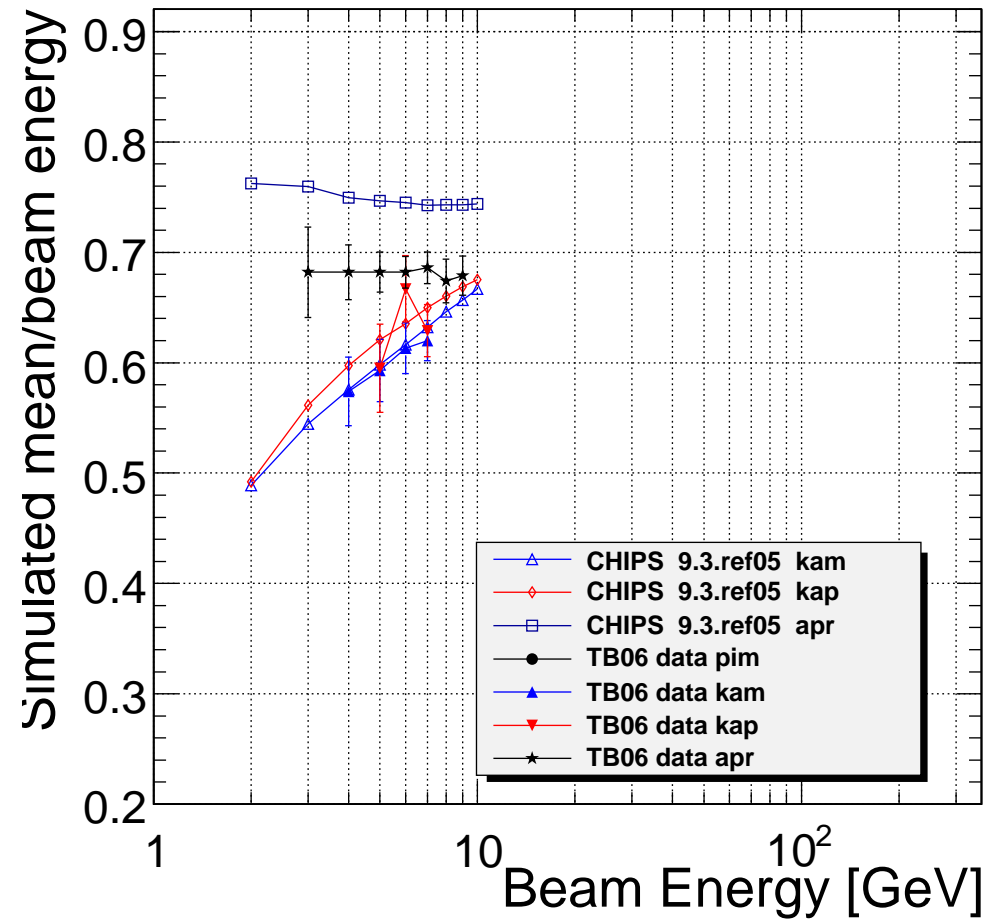
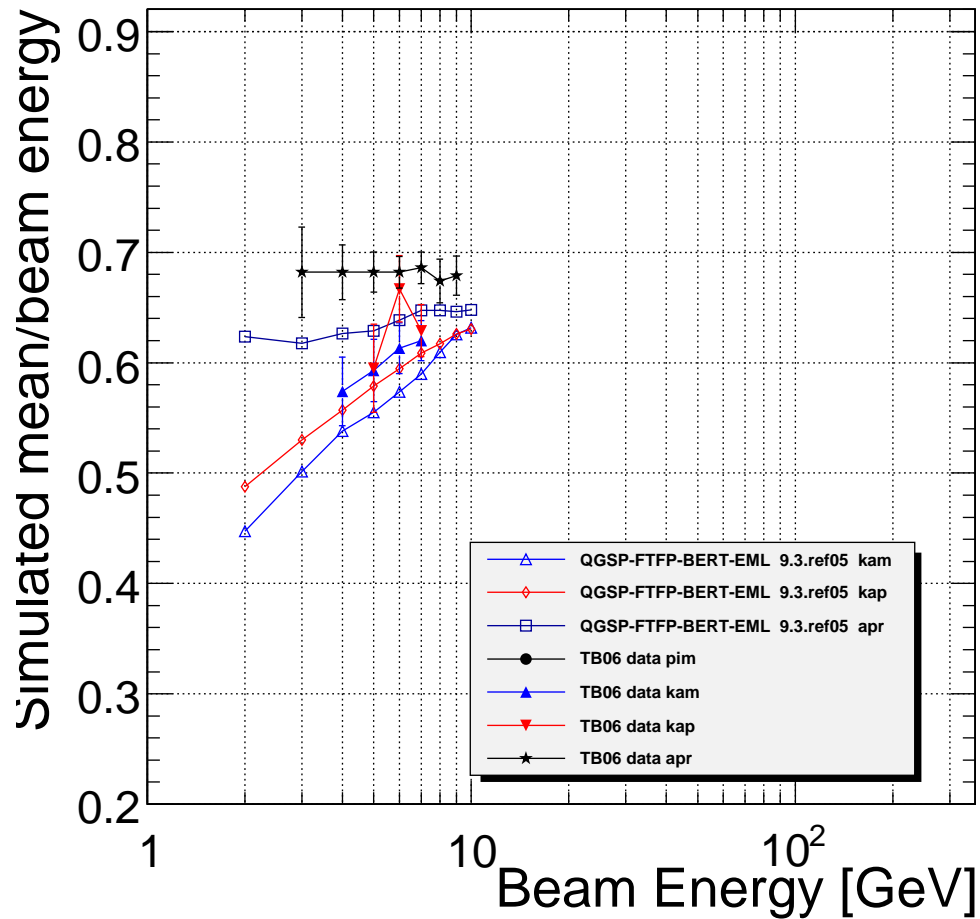
response

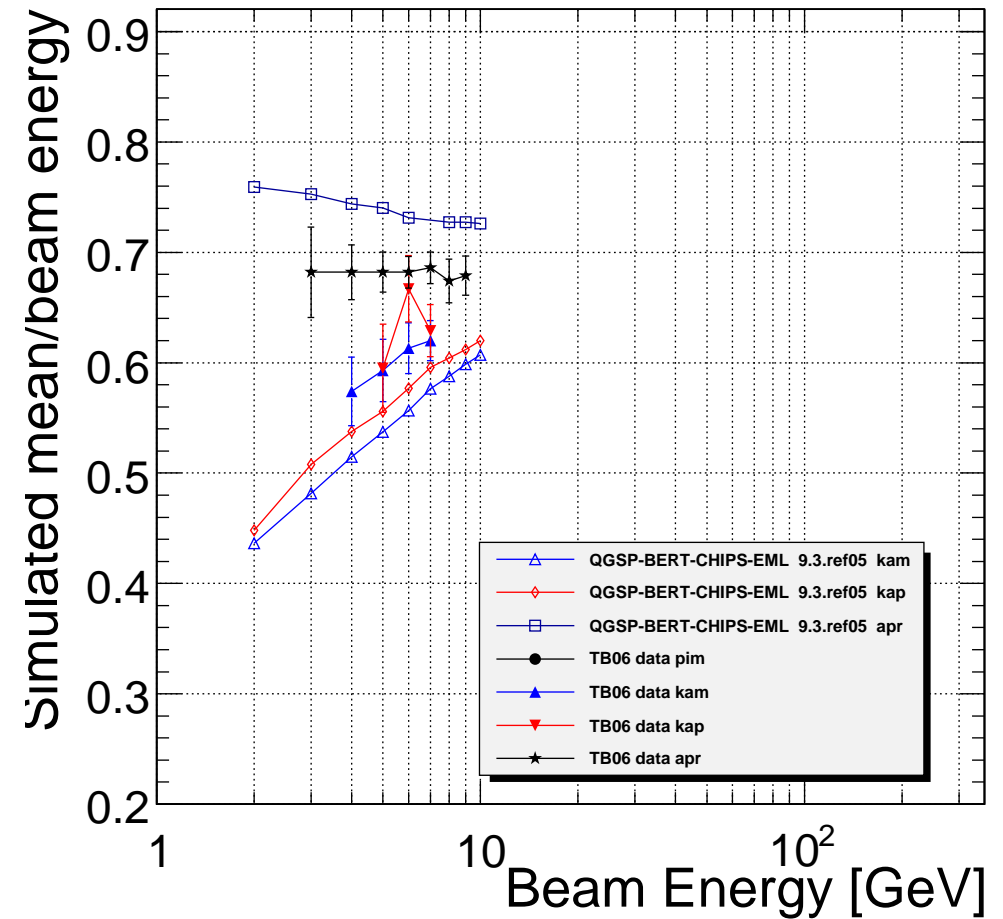
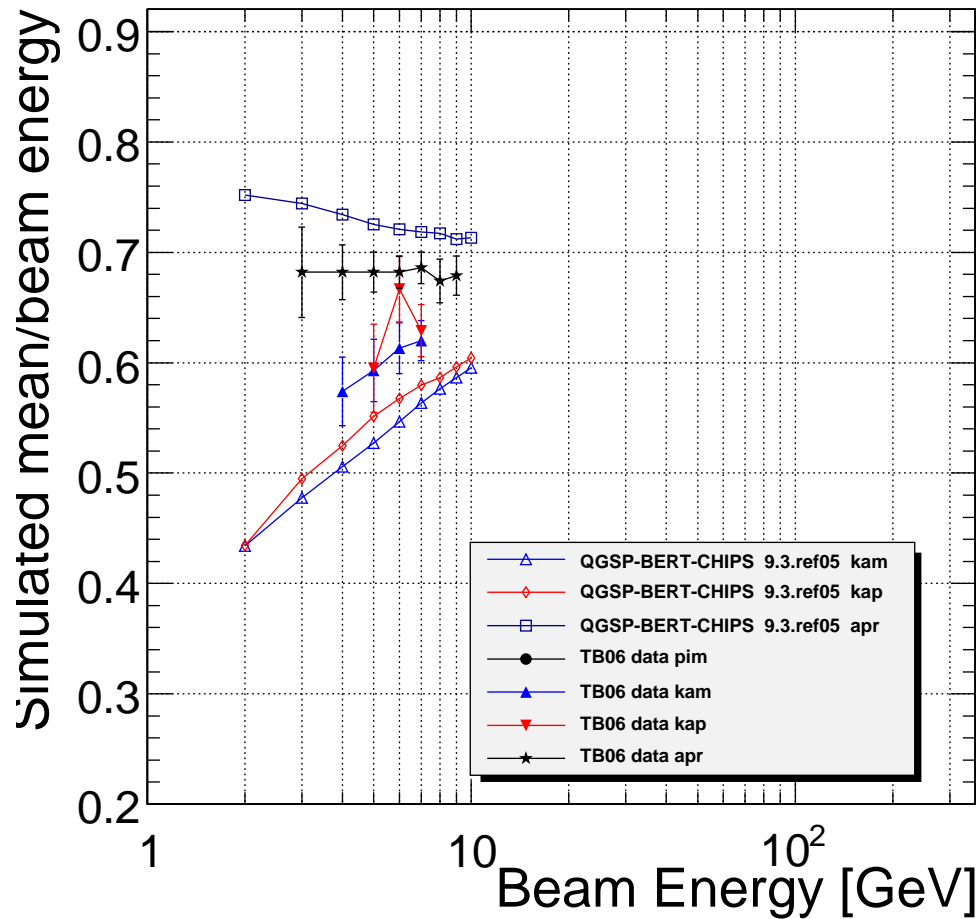
QGSP-BERT-CHIPS-EML vs QGSP-FTFP-BERT-EML

G4.9.3.ref05









Summary

- Results from G4.9.3.ref03 and -ref05 are identical for the three TITANs physics lists. All the changes concerning changes in BERT-code for protons have been retained.
- CHIPS-code overestimates pion and proton response in the low-energy range.
- New list QGSP-BERT-CHIPS is better; and QGSP-BERT-CHIPS-EML is even better - comparable to QGSP-BERT-EML.
- Kaon and anti-proton response is underestimated by the TITANs lists.
- Kaon response is matched very well by CHIPS physics list, while anti-proton is overestimated.
- New lists QGSP-BERT-CHIPS and QGSP-BERT-CHIPS-EML underestimate kaon response, and over-estimate anti-proton.