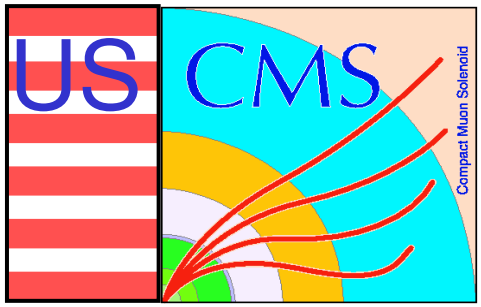
PtMurec and PtRec RMS for Pt=100 GeV muons



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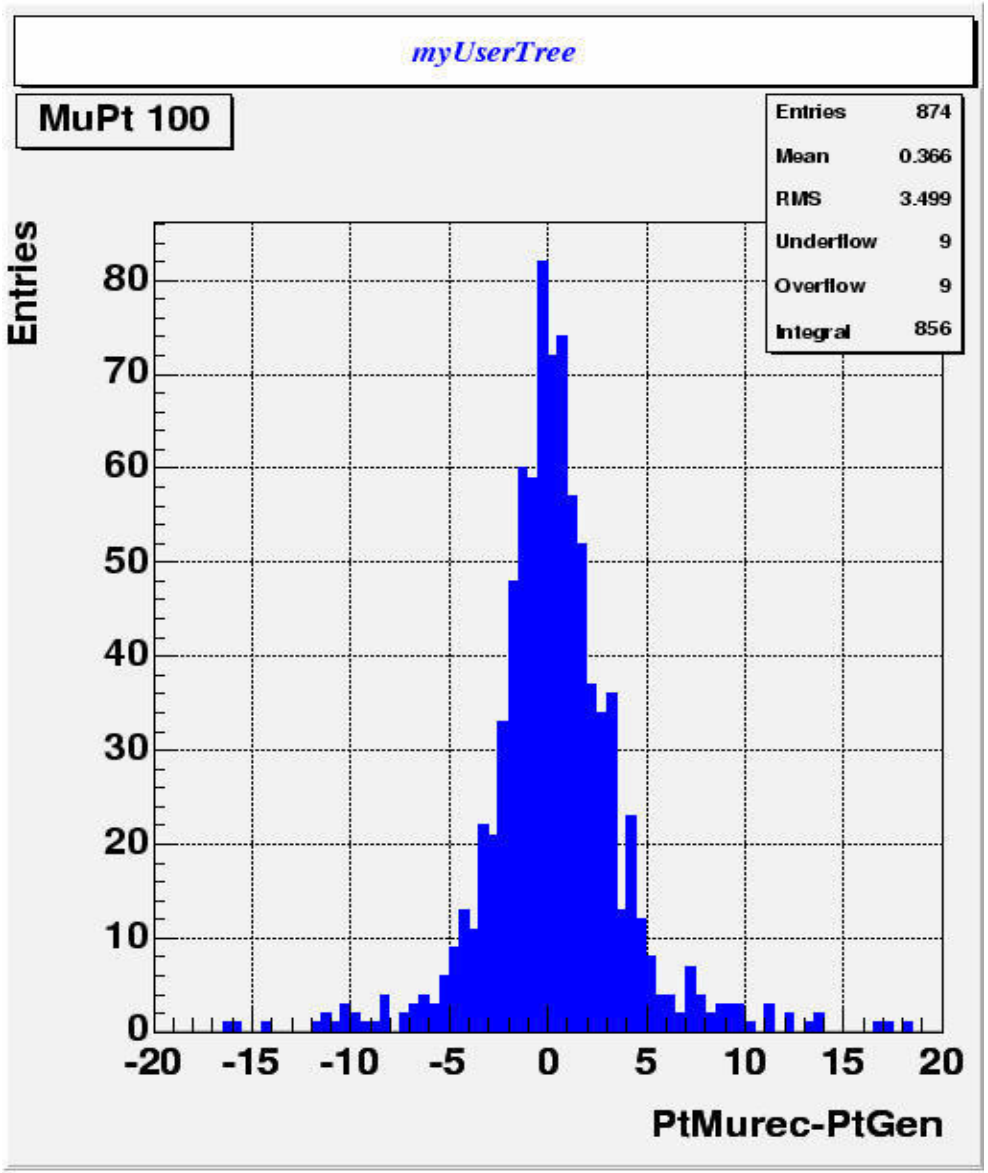
PtMurec and PtRec RMS

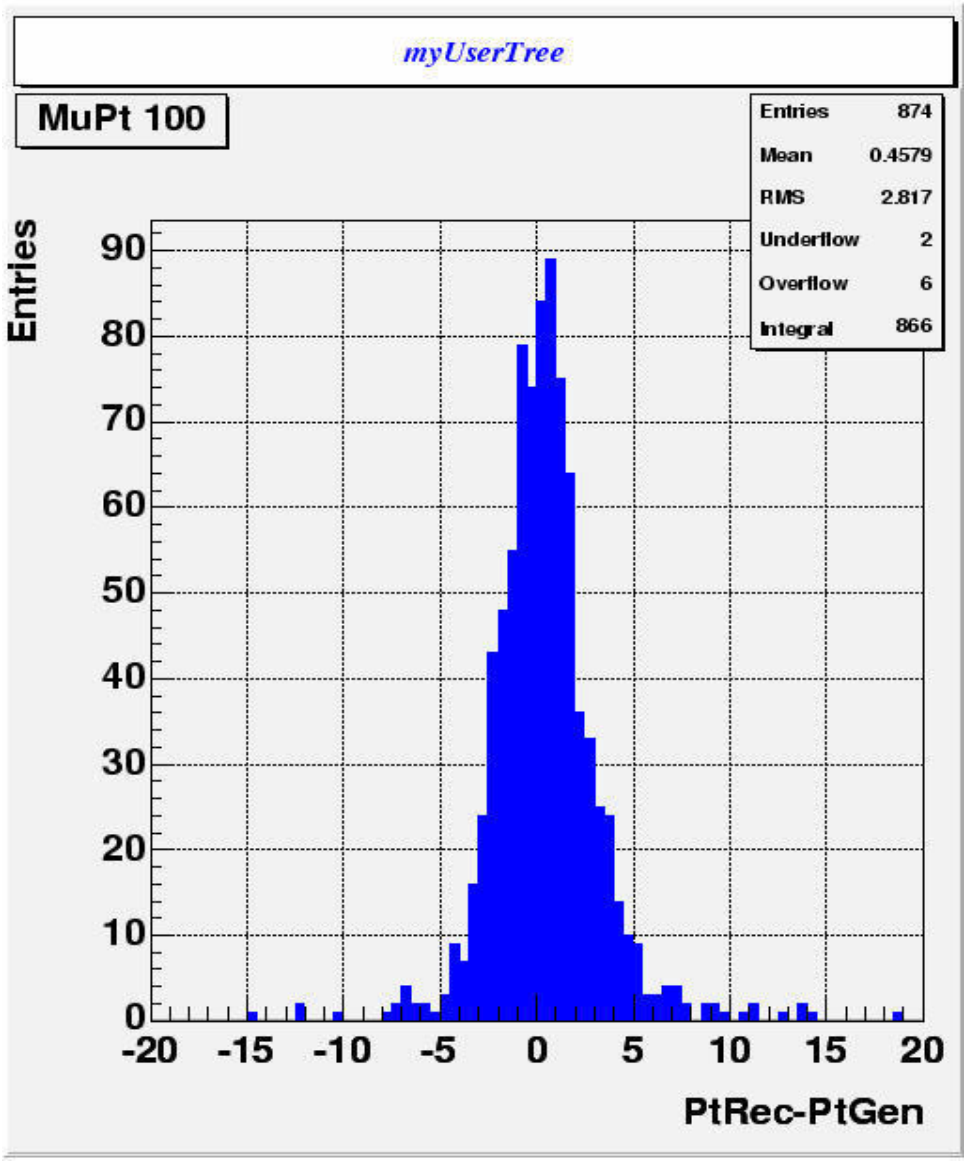
- **Data**
  - The single muon particle gun sample, Pt=100 GeV
  - Flat in Phi over all Phi
  - Flat in Eta from -2.5 to 2.5
  - 1,000 events
  - OSCAR_3_2_2 and ORCA_8_1_3
- **Selection**
  - One simulated muon in GEANT block (PtGen)
  - One reconstructed muon track (PtMurec) (Tracker and Muon Barrel / Muon Endcap)
  - One Reconstructed track in Tracker (PtRec)
  - Overall yield 87.4%
- **Compare RMS for (PtMurec-PtGen) and (PtRec-PtGen)**

PtMurec and PtRec RMS

- **RMS=3.50(08)**

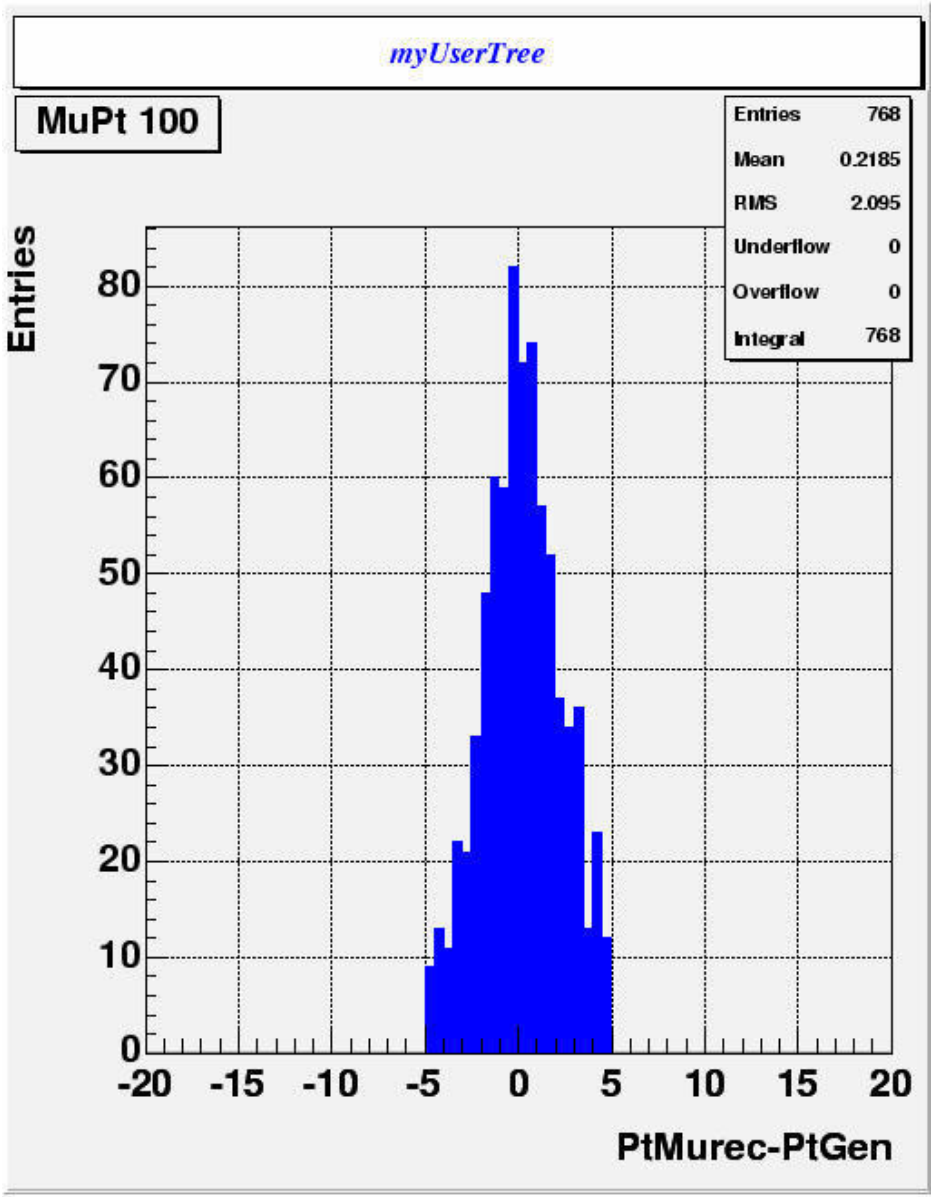


RMS=2.82(07)

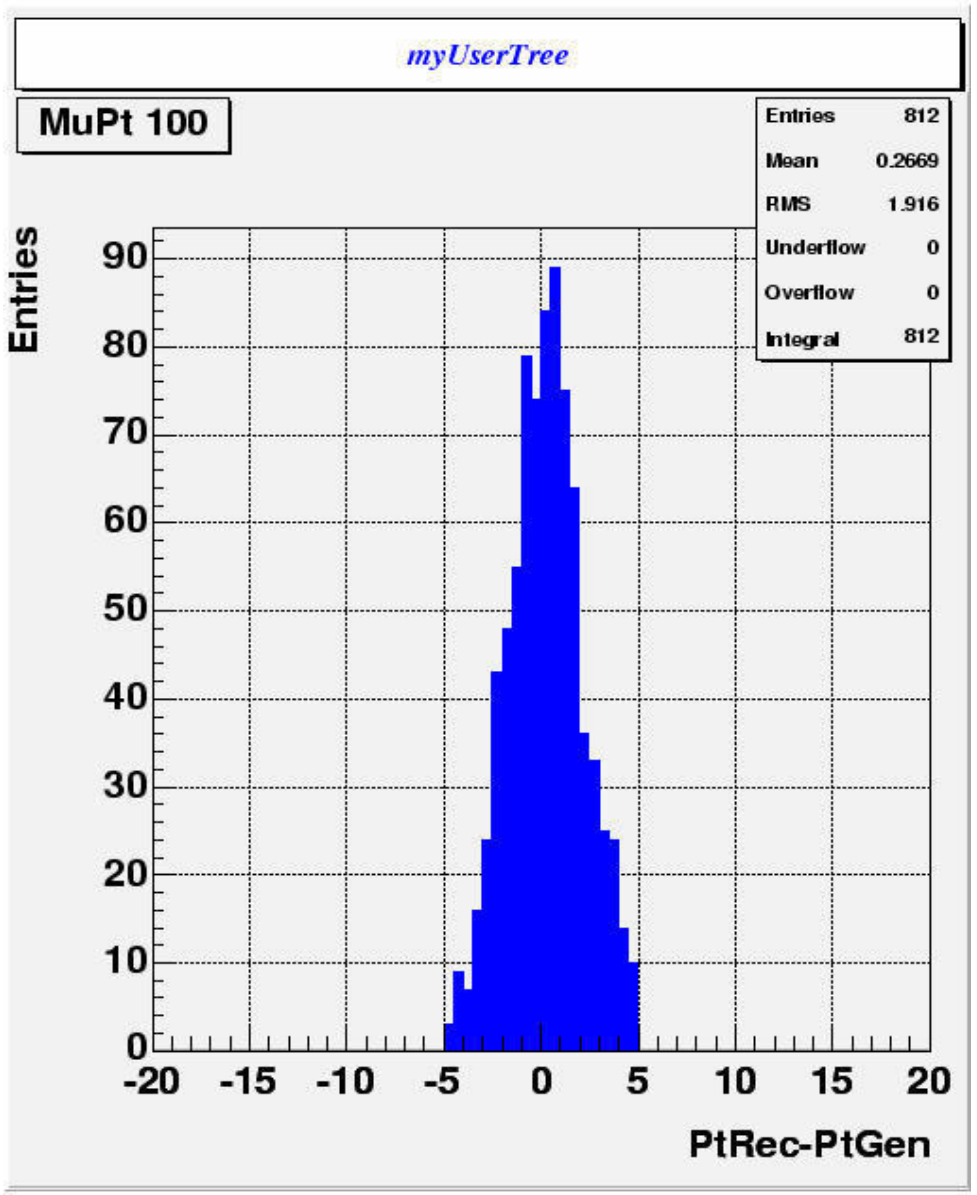


PtMurec and PtRec RMS

- **RMS=2.09(09)**

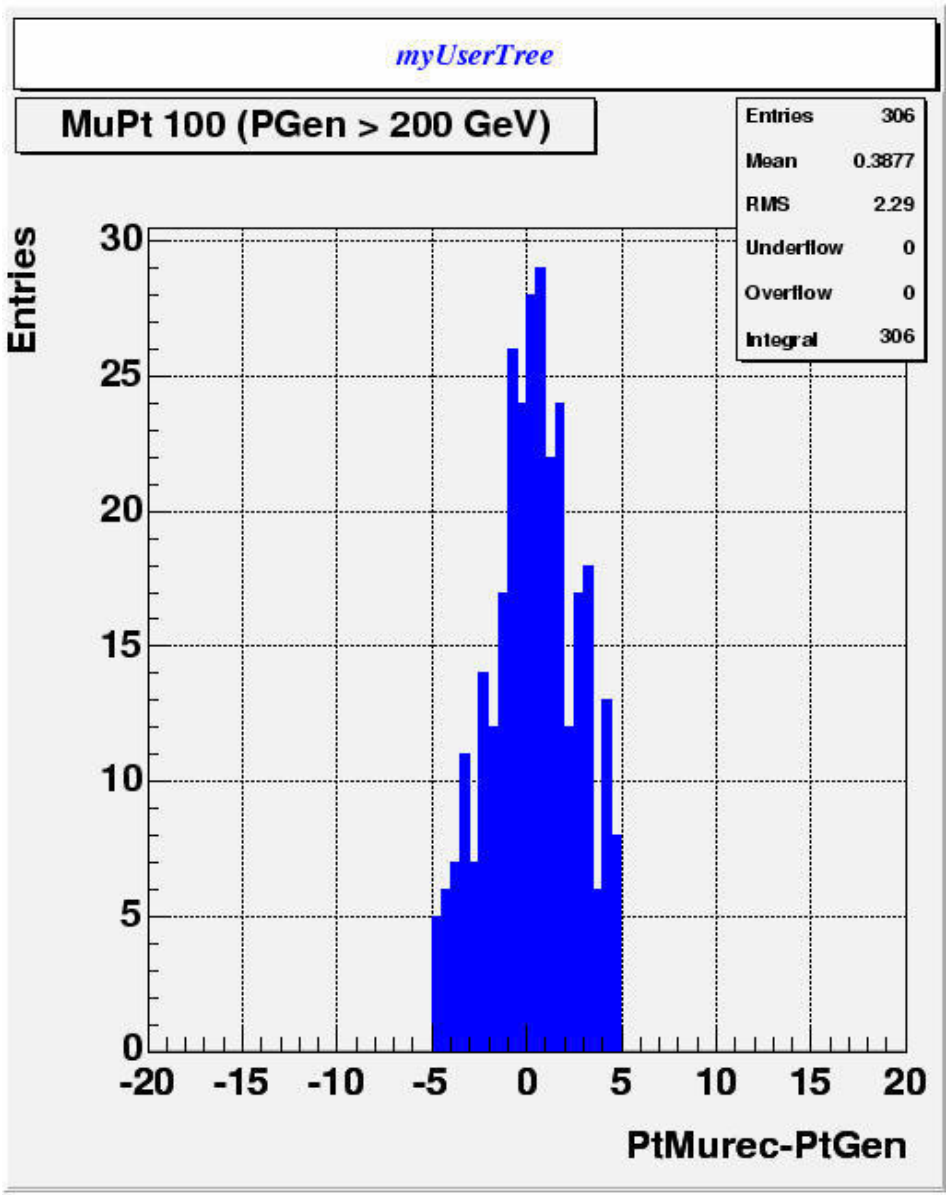


RMS=1.92(08)

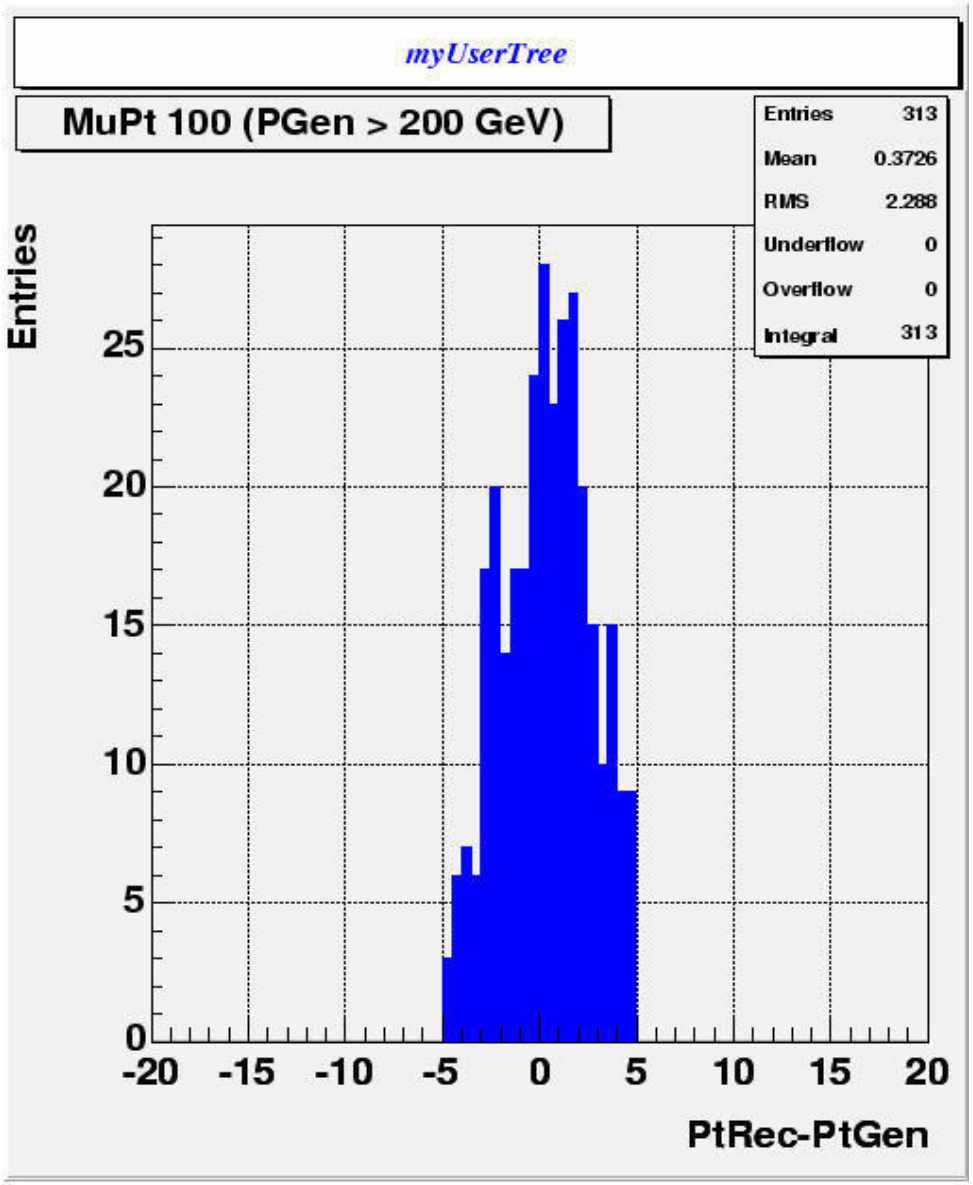


PtMurec and PtRec RMS

- **RMS=2.29(09)**

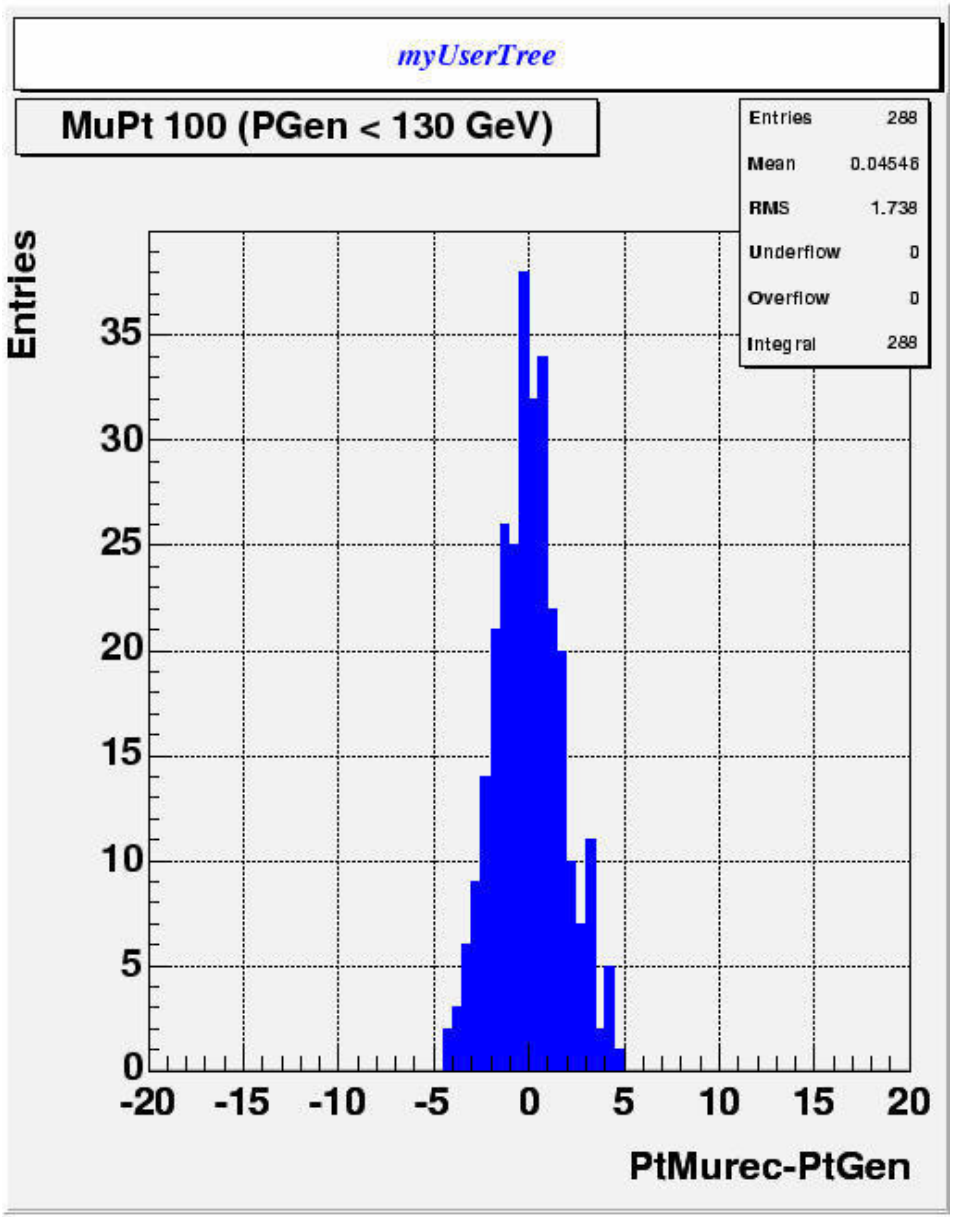


RMS=2.29(09)

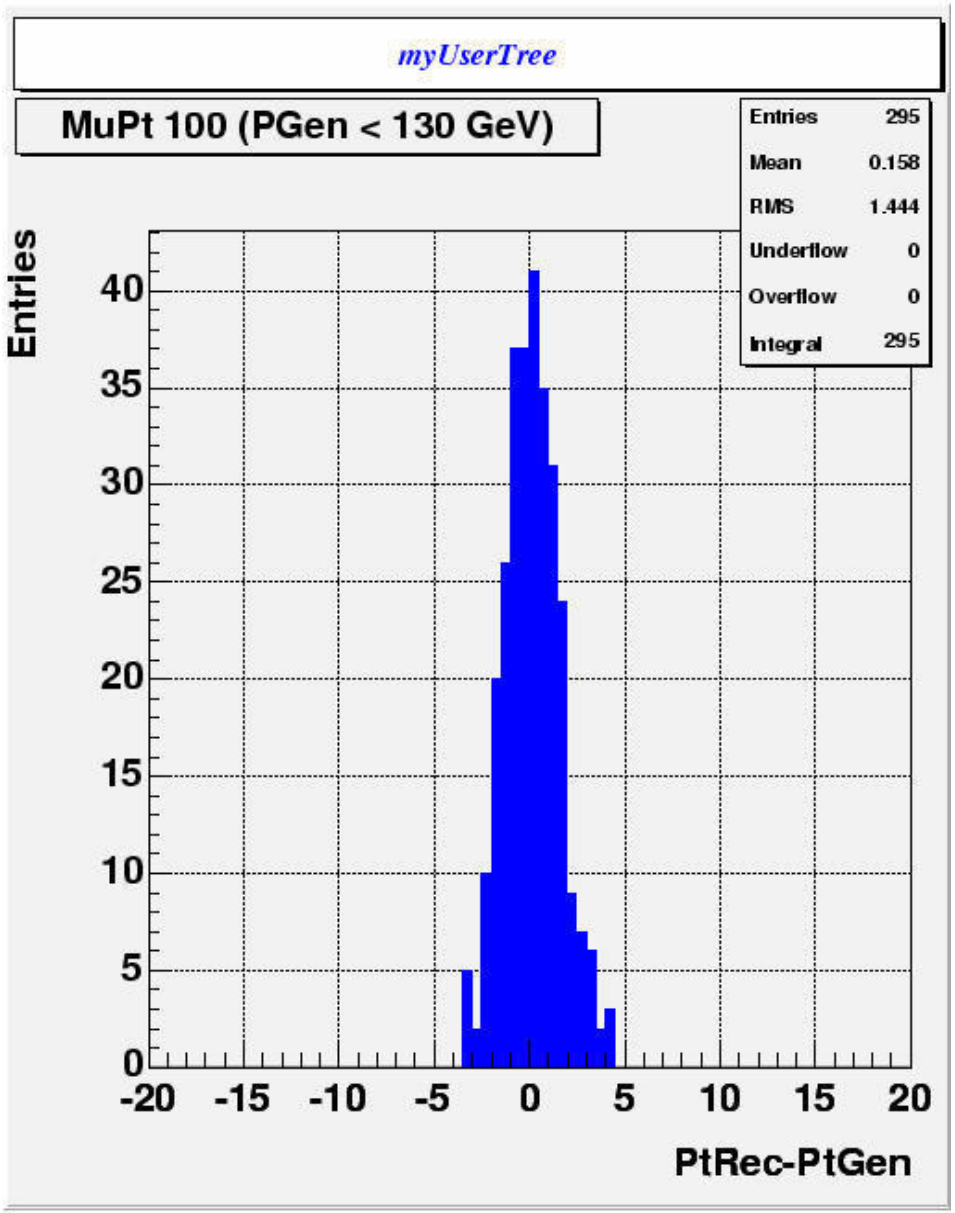


PtMurec and PtRec RMS

- **RMS=1.74(07)**



RMS=1.44(06)



PtMurec and PtRec RMS

- RMS Summary

PtMurec-PtGen	PtRec-PtGen	Conditions
3.50(08)	2.82(07)	All PGen -20 <Pt-PtGen<20
2.09(09)	1.92(08)	All PGen -5 <Pt-PtGen<5
2.29(09)	2.29(09)	PGen > 200 -5 <Pt-PtGen<5
1.74(07)	1.44(06)	PGen < 130 -5 <Pt-PtGen<5

PtMurec and PtRec RMS

- **Conclusion**
  - RMS(PtMurec-PtGen) and RMS(PtRec-PtGen) are different mainly due to tails contribution (outliers)
  - For endcap region (PGen > 200 GeV or |EtaGen| > 1.4)
    RMS are close if no outliers
  - For central region (PGen < 130 GeV or |EtaGen| < 0.8)
    RMS(PtMurec-PtGen) > RMS(PtRec-PtGen) even when no outliers. Why?
  - The widths should be fitted to be compared, RMS are biased by outliers
  - Better to compare 1/Pt (less spread, D.Acosta)