Jet Energy Resolution Validation

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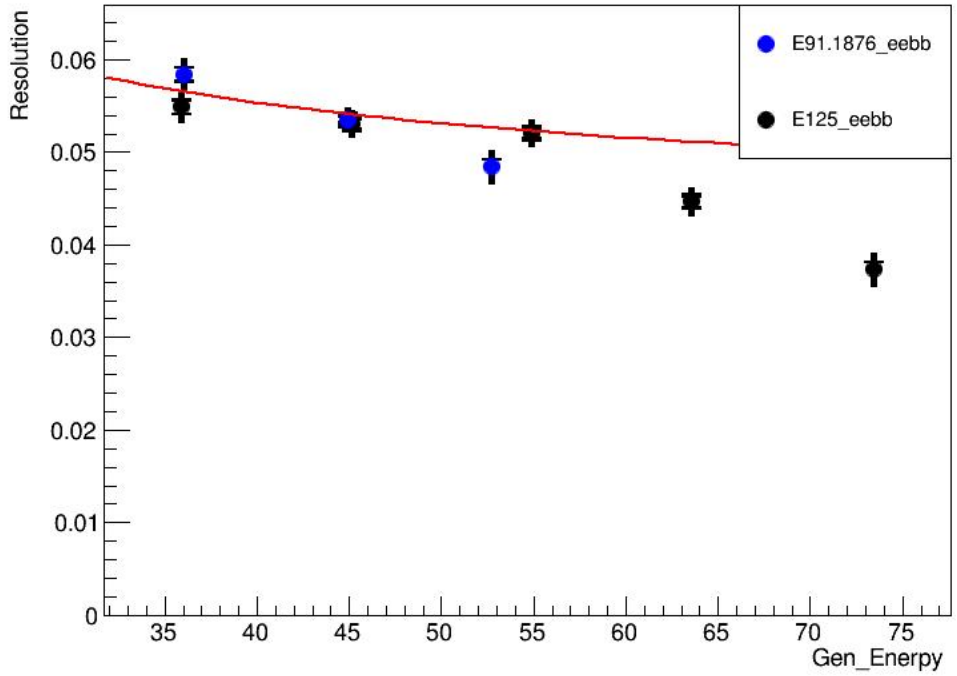
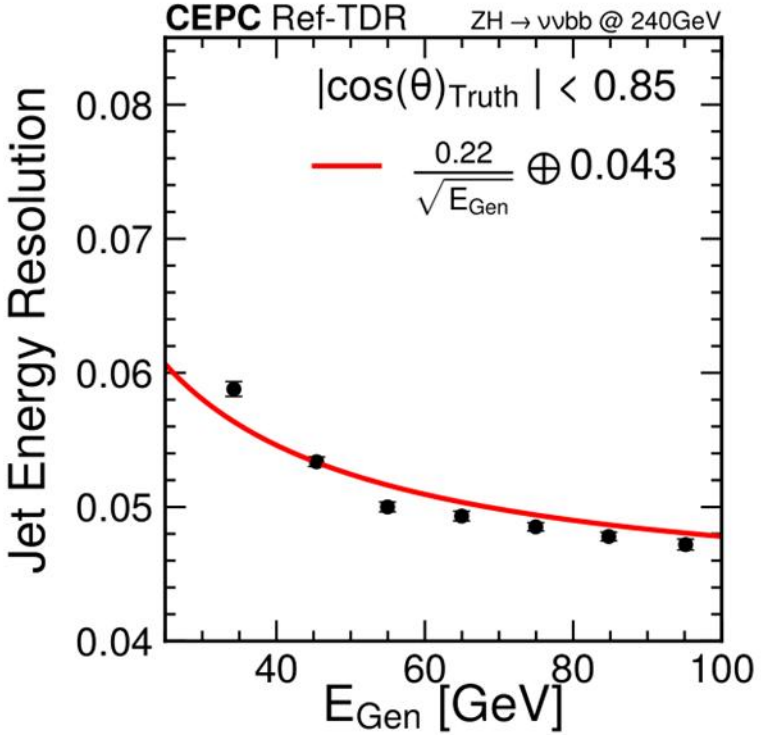
1 IHEP

Intoduction

- Use whizard1.95 to generate 200000 ee to bb events.
- When collision energy is set 125GeV, the resolution performance at 60~80GeV is different from the TDR results.
- Hao Zhu and I did the cross validation this week.





TDR Result

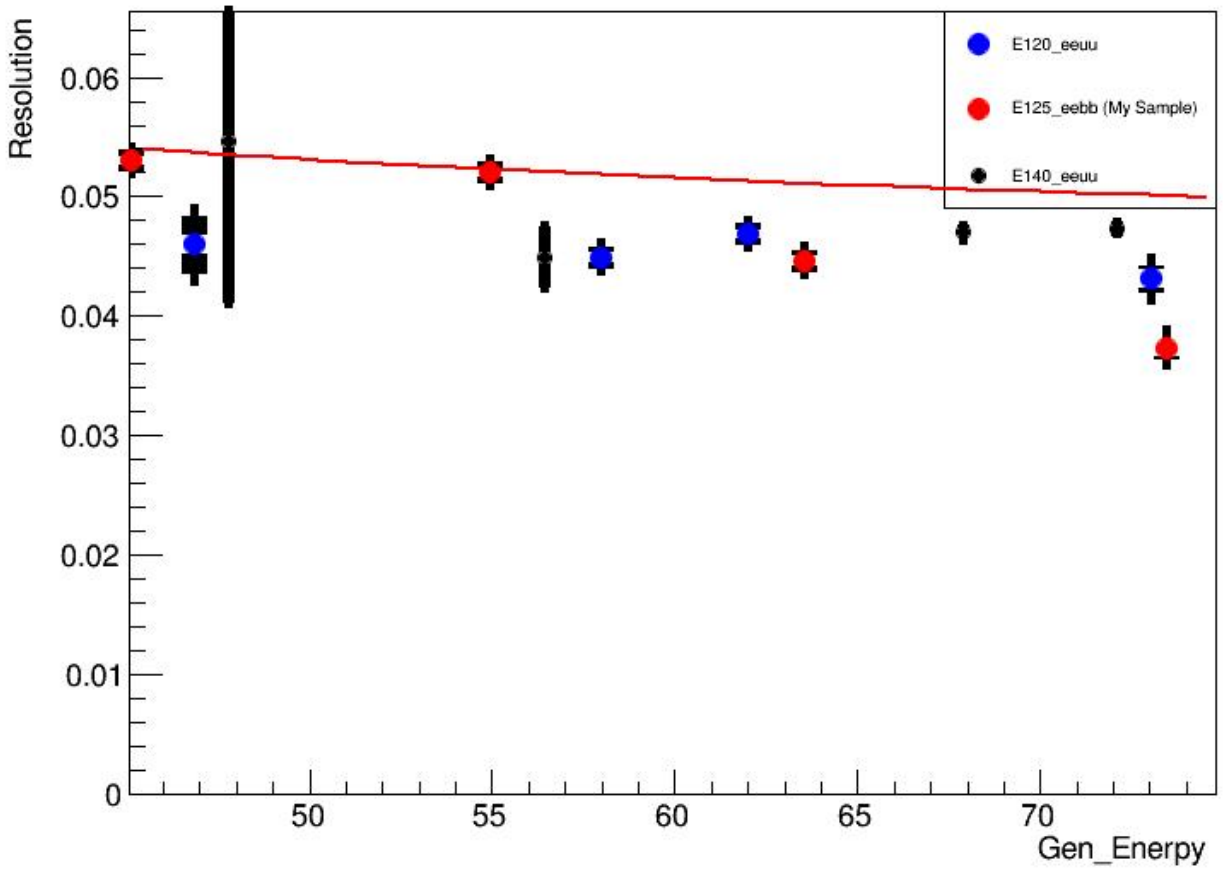
Validation

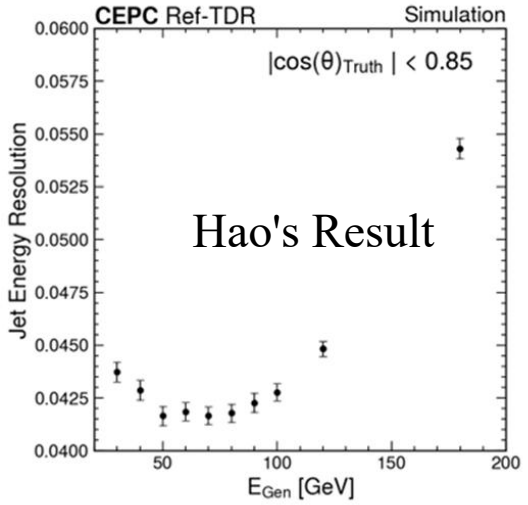
- Dataset: E120_eeuu, E140_eeuu (from Hao Zhu) .
  - Use Kaili's .stdhep, reconstructed by CEPCSW25.3.7.

- Cut
  - $|\cos\theta| < 0.85$.

- Calculation
  - ΔE= E(RecoJet) – E(GenJet).
  - sigmaE: Use TwoSidedCB to fit the ΔE.
  - Resolution = sigmaE/E.

- Comparision
  - The JER Performance of eeuu is consistent with Hao's result.
  - The Resolution values are smaller than Kaili's result in TDR.





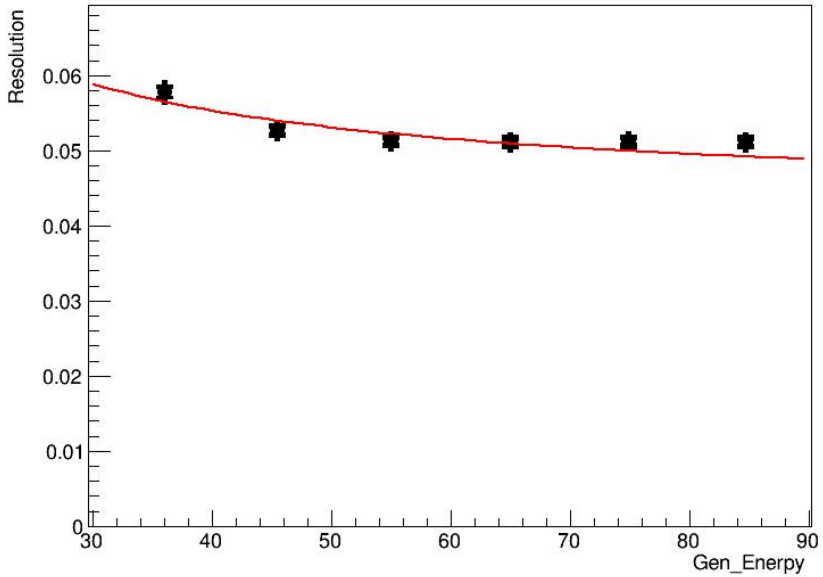
Validation

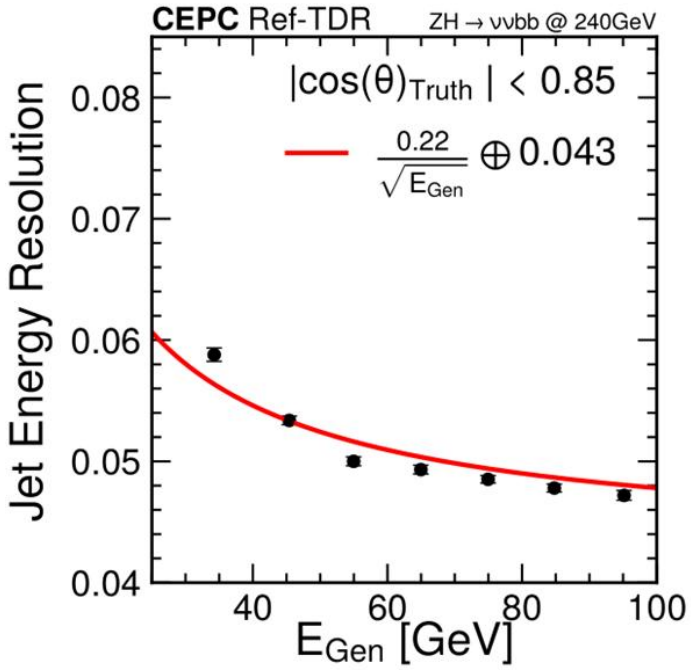
- Dataset: /cefs/higgs/zhangkl/Production/25037/joi/E240_nnHbb/Reco/rec*.root.
  - Use the same process as TDR.
  - Reconstructed by CEPCSW25.3.7.
  - Jet Reconstruction by eekt.
  - Jet truth match with ΔR.

- Cut
  - $|\cos\theta| < 0.85$.

- Calculation
  - ΔE= E(RecoJet) – E(GenJet).
  - sigmaE: Use TwoSidedCB to fit the ΔE.
  - Resolution = sigmaE/E.

- Result
  - Consistent with Kaili's result.





TDR Result

Summary

- Check the JER performance of E120_eeuu, E140_eeuu and E240_nnHbb.
  - Resulution in high energy region don’t show significant decline(Same as Hao’s result).

- Conclusion
  - Difference on JER might be related to difference between samples.