Smuon Pair MC/Rec. Comparison with CEPCSW 25.3.6 at CEPC@240GeV

LYU Feng, LIANG Shiyi, ZHUANG Xuai

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Basic Information

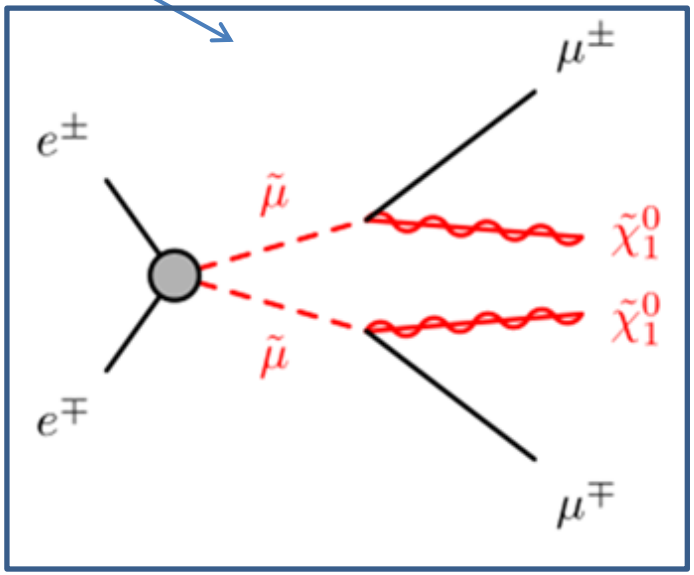
- **CEPC@240GeV smuon pair samples under CEPCSW 25.3.6 are produced by LIANG Shiyi:**
/lustrefs/atlas/SUSY/users/liangsy/CEPC/cepcsampleproduction/smuonRec/Reco/HADD/rec*.root, which has 73 mass points: (Msmu, MLSP)
Msmu: 80, 90, 100, 115, 118 GeV
MLSP : 1, 10, 20, …. , Msmu-10, Msmu-5, Msmu-2 GeV

- **Analysis code modified from KAI li's tutorial:**
https://code.ihep.ac.cn/zhangkl/cepcsw_tutorial/-/tree/master/analysis?ref_type=heads

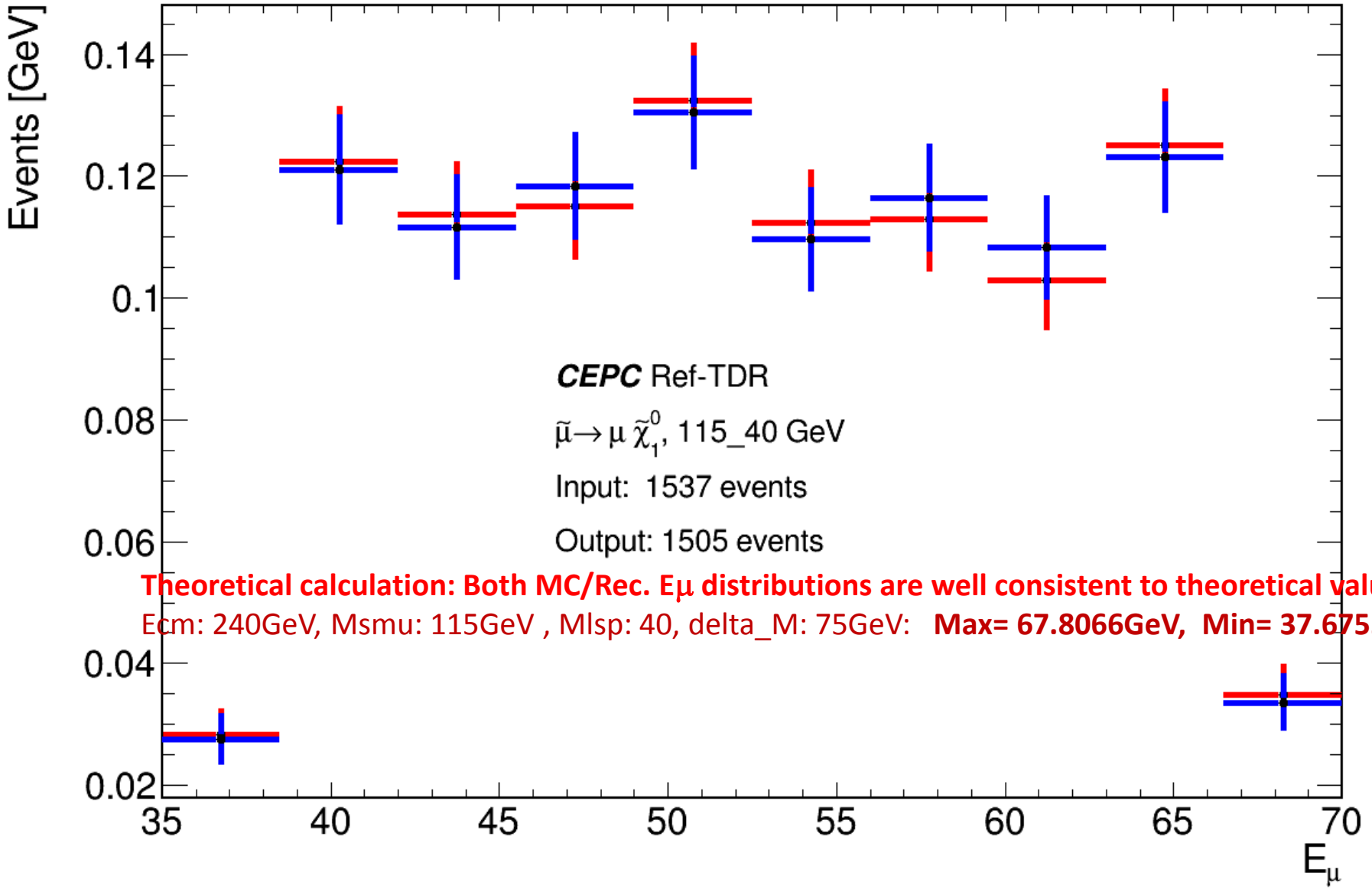
- **Preselection:** Two enerhetic tracks >0.5GeV, NoPID,
OS, Rec. Truth match: $\Delta R<0.1$

- **Variables:**
Eμ: the muon energy
Mμμ: the muon pair invariant mass
pT: the muon pair system total transverse momentum
M_{recoi}: the muon pair system recoil mass

- **Reference mass point:** (115,40) GeV



Red: Rec. Blue: Truth well consistent !



Theoretical calculation: Both MC/Rec. Eμ distributions are well consistent to theoretical value!

Ecm: 240GeV, Msmu: 115GeV , Mlsp: 40, delta_M: 75GeV: **Max= 67.8066GeV, Min= 37.6755GeV**

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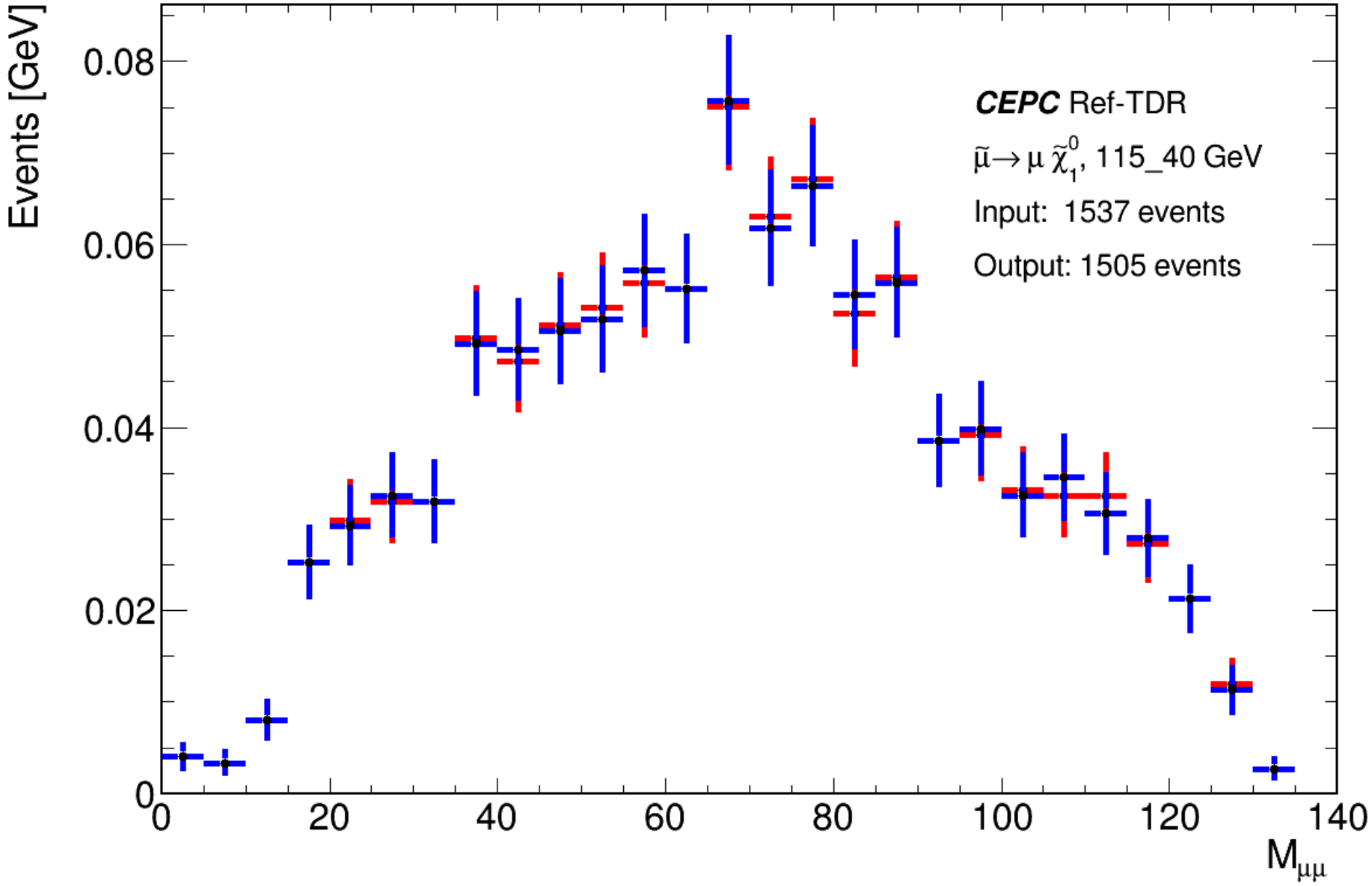

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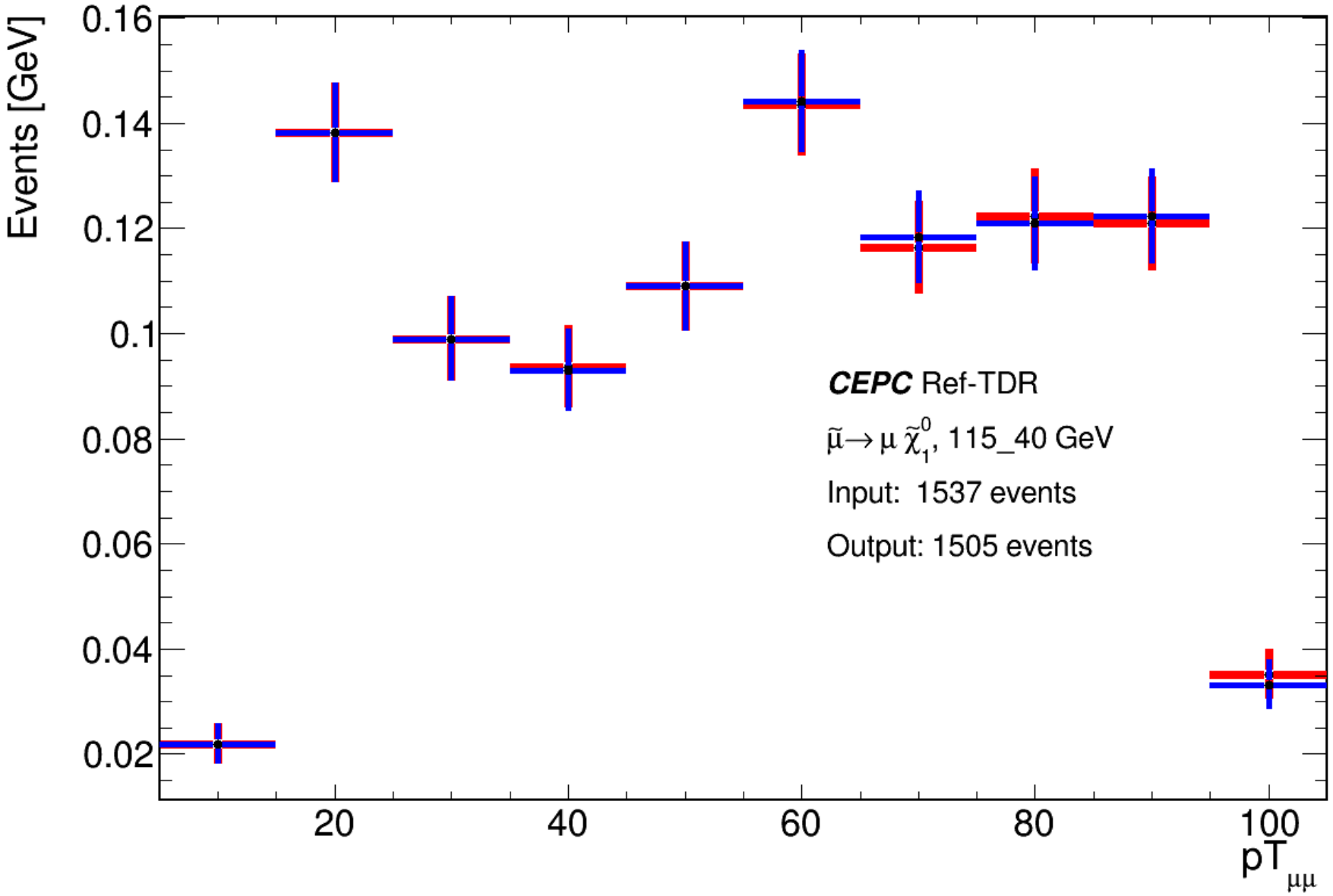

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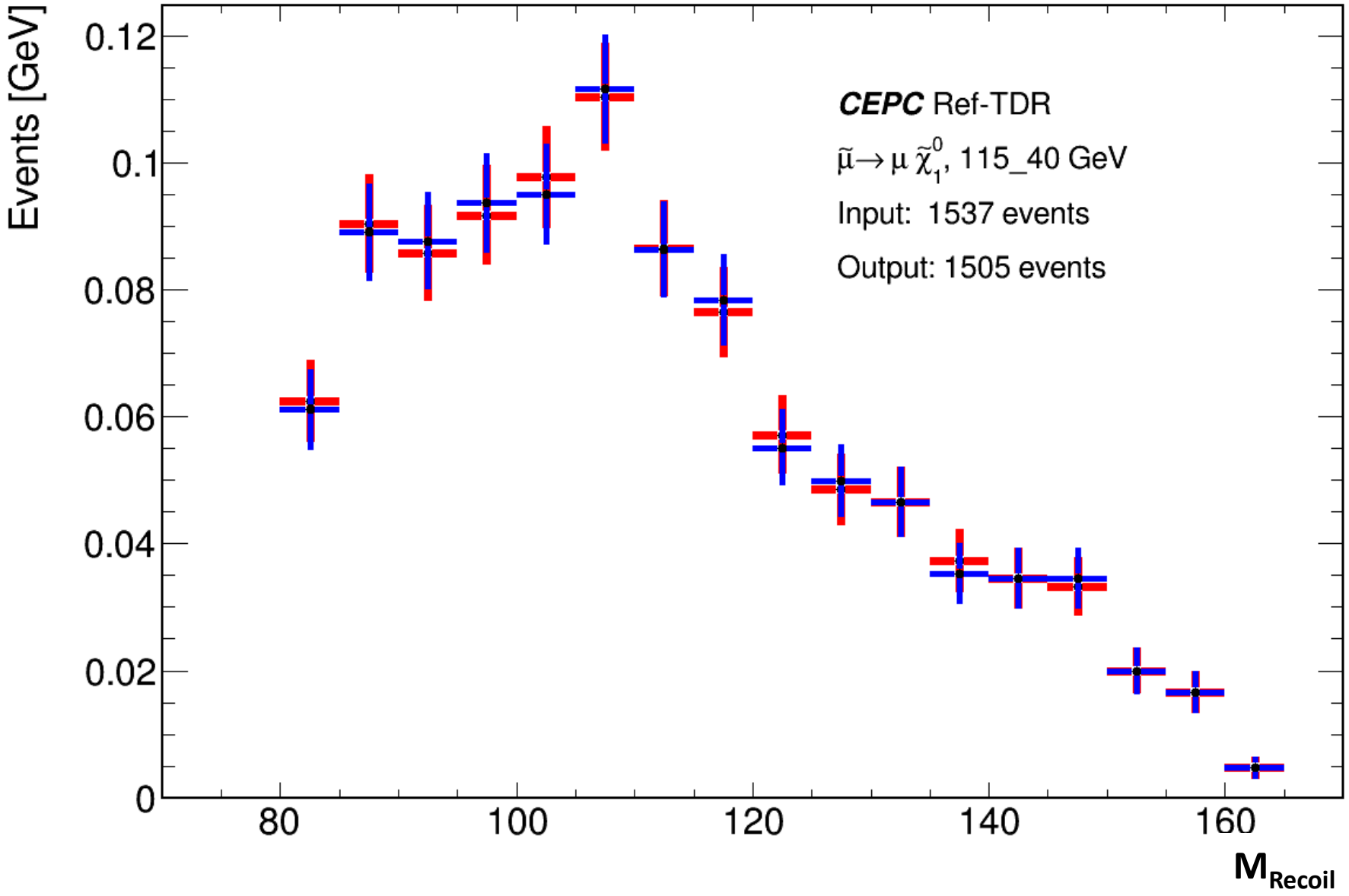

Conclusion

Rec./Truth performances comparison is well consistent by CEPC@240GeV smuon pair mass point (115, 40GeV) μ-channel check under CEPCSW 25.3.6