

# Photon induced background in LHCb DY measurements

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TMD meeting

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# Estimation of photon induced background in the LHCb measurement

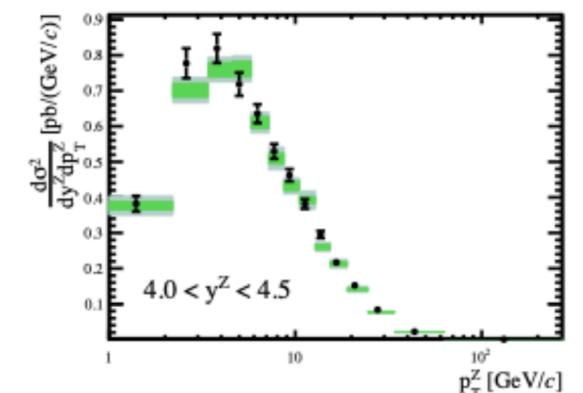
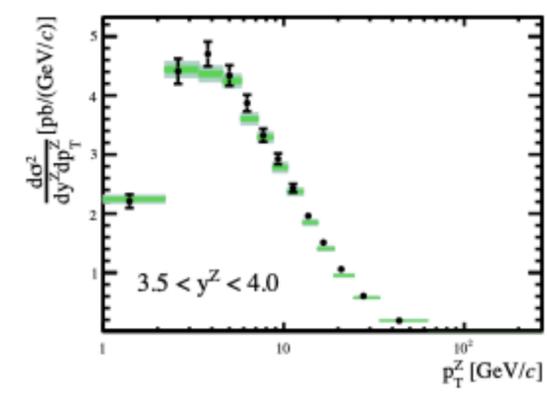
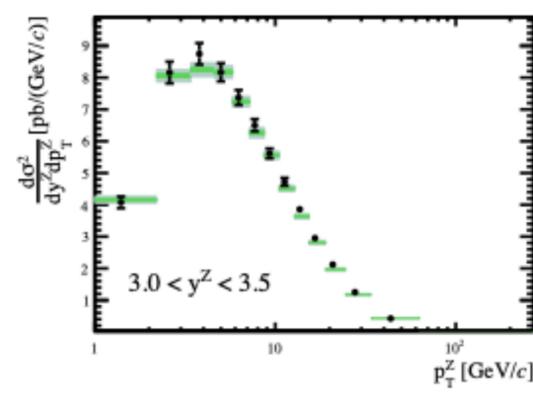
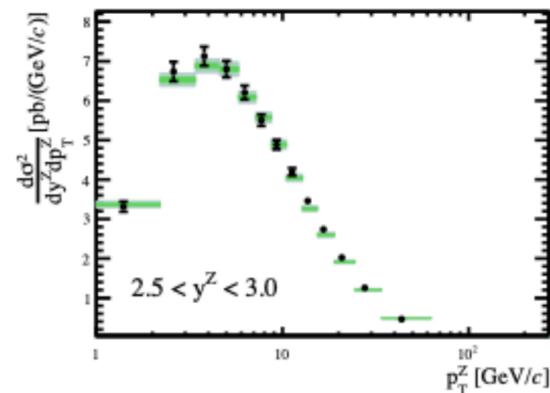
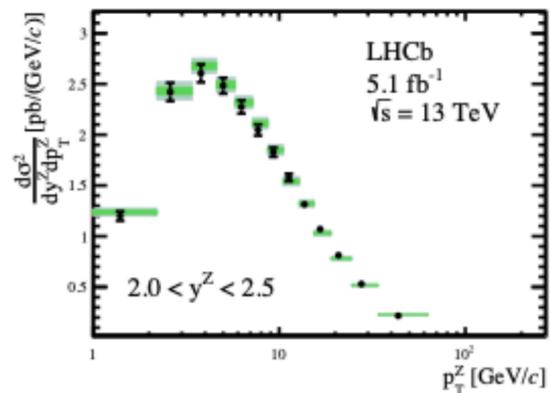
LHCb publication - 13 TeV [[arXiv:2112.07458](https://arxiv.org/abs/2112.07458)]

$$60 < M_{\mu\mu} < 120 \text{ GeV} \quad \&\& \quad P_T > 20 \text{ GeV} \quad \&\& \quad 2.0 < \eta_\mu < 4.5$$

$$\int_{fid} d\sigma = 196 \text{ pb}$$

Pt 14 bins - edges: [0.0, 2.2, 3.4, 4.6, 5.8, 7.2, 8.7, 10.5, 12.8, 15.4, 19.0, 24.5, 34.0, 63.0, 270.0] GeV

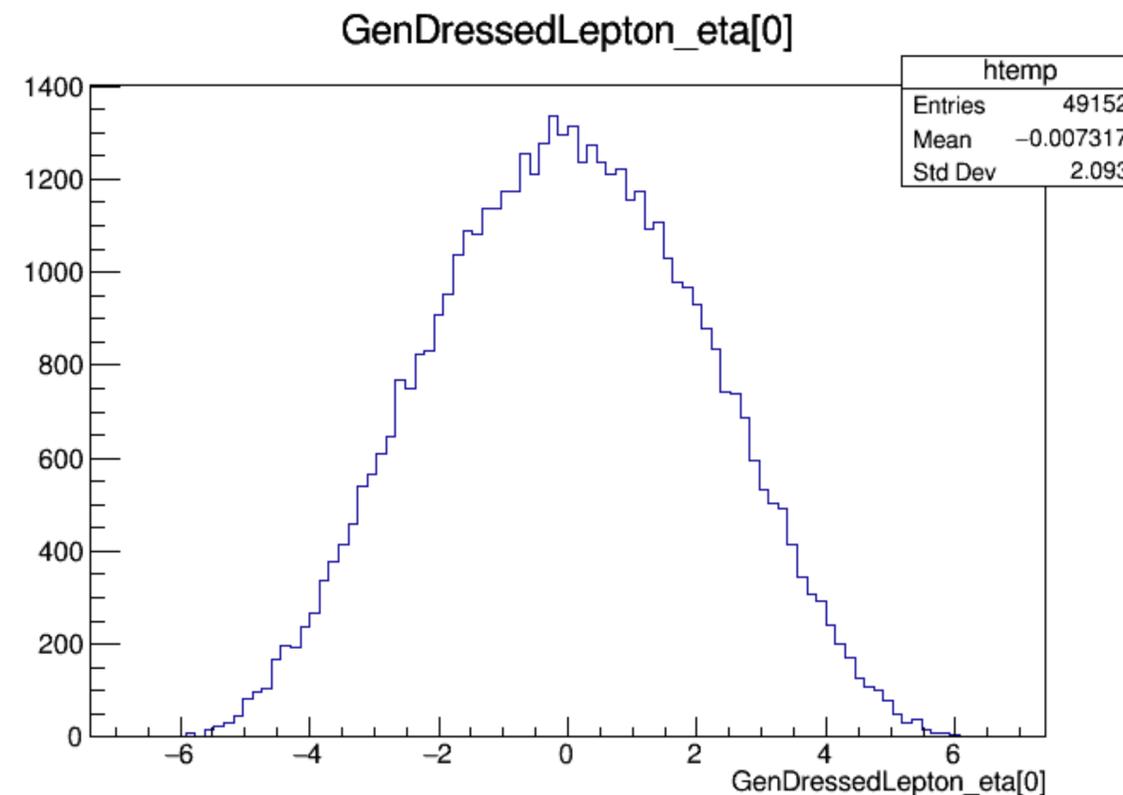
y 5 bins - edges: [2.0, 2.5, 3.0, 3.5, 4.0, 4.5]



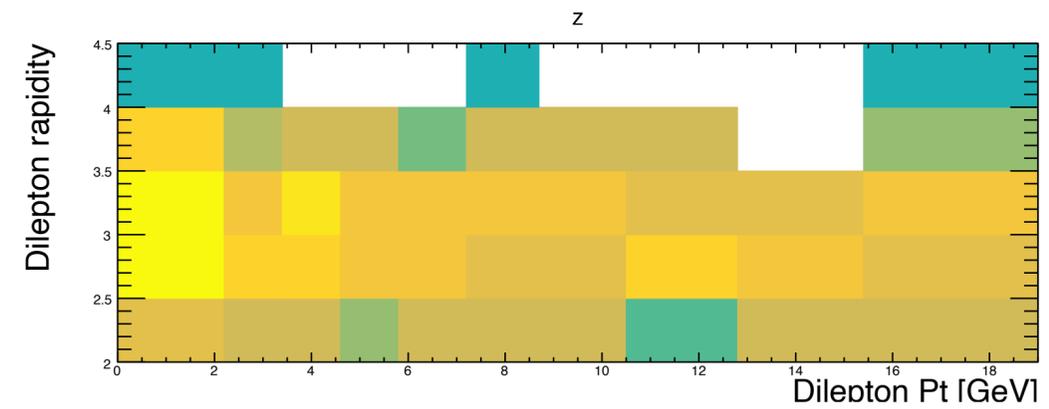
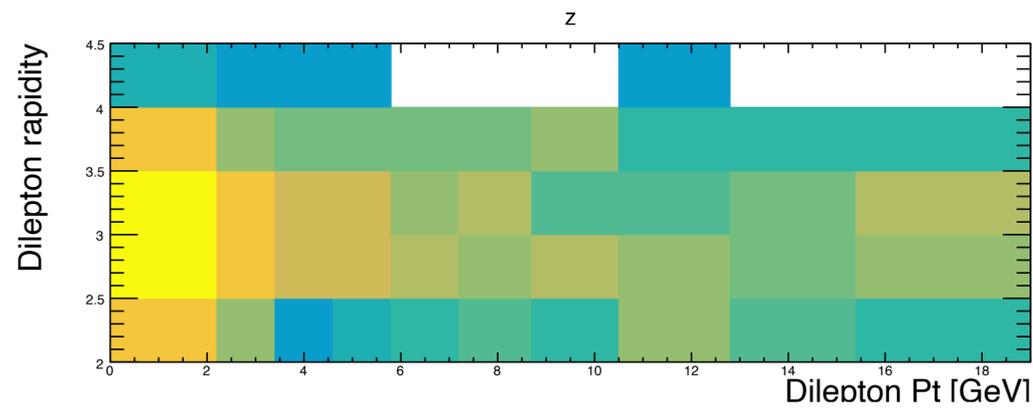
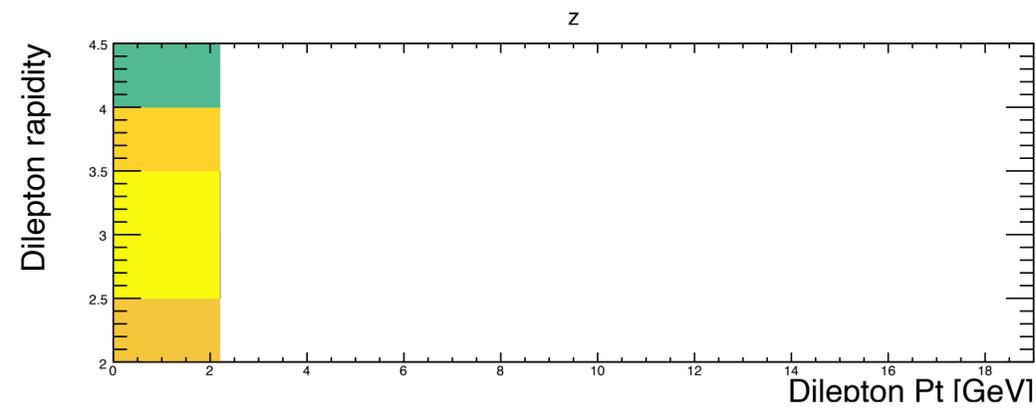
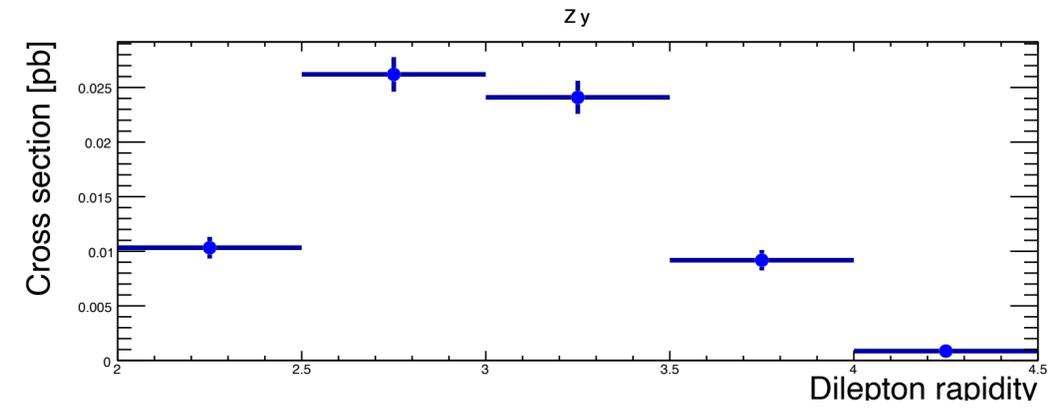
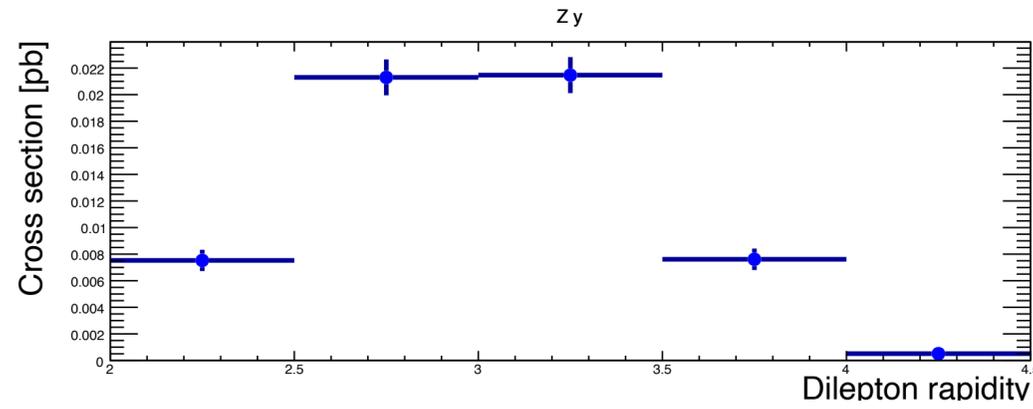
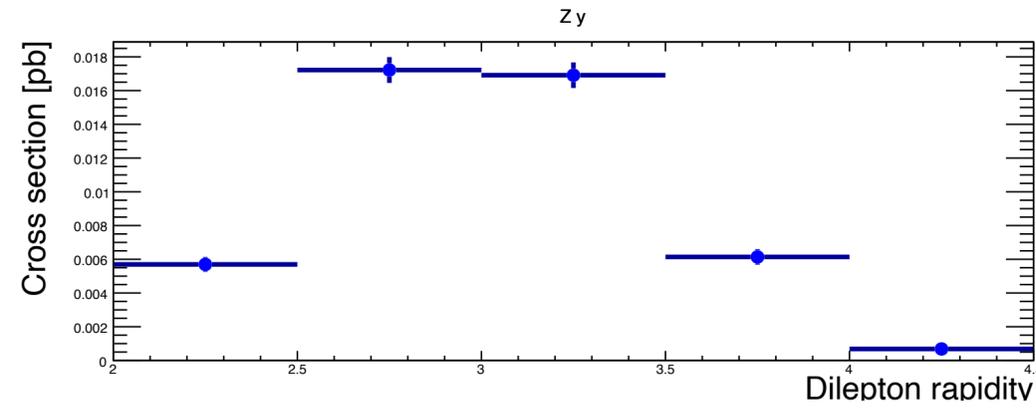
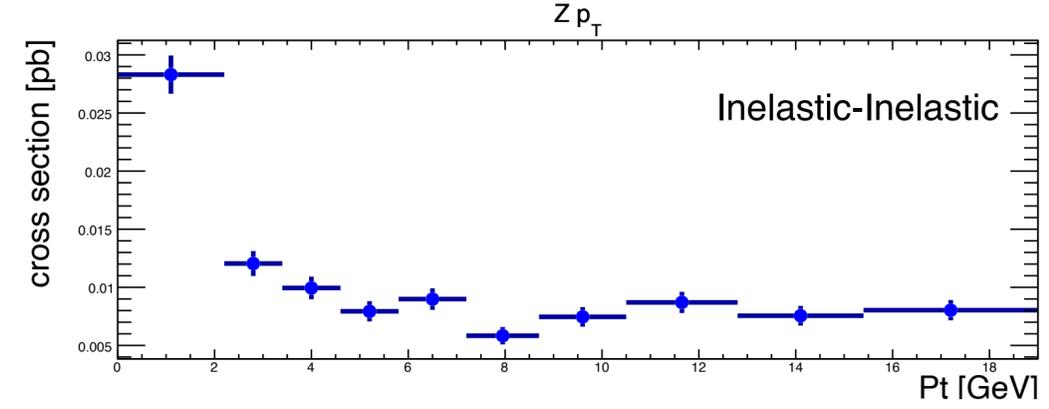
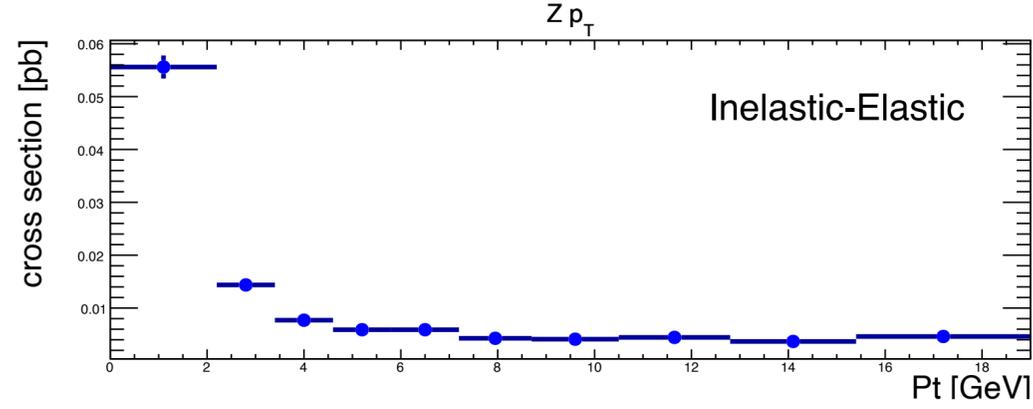
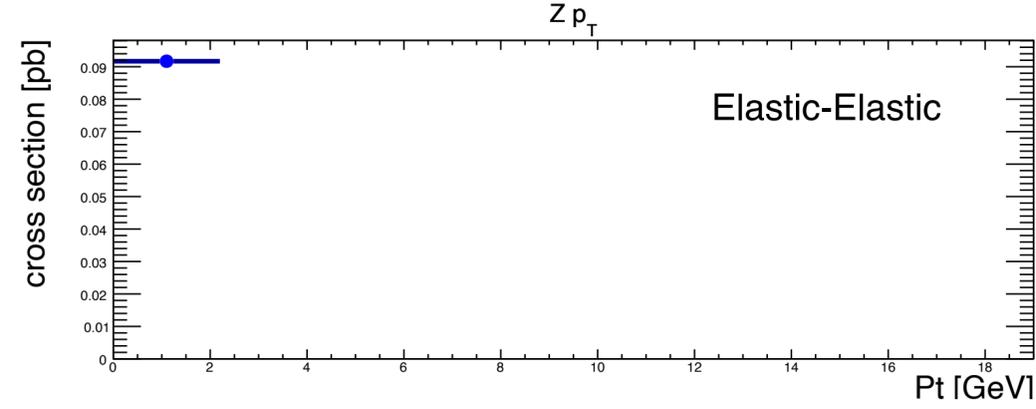
# Simulation induced background

From LPAIR (Mass 40- 200 GeV, no lepton eta cut, no lepton Pt cut, Suri-Yennie QEDPDF)

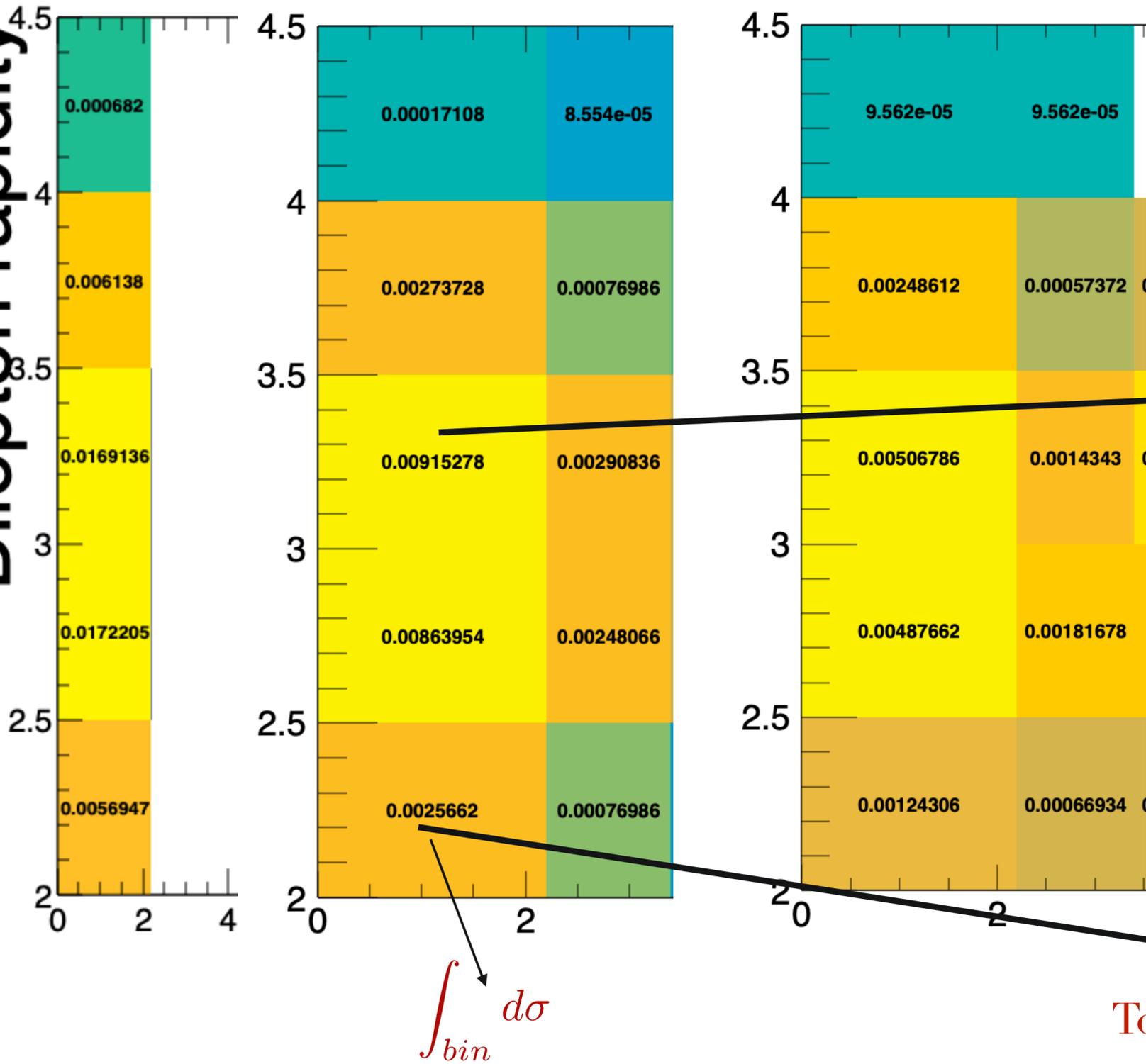
- Elastic-Elastic - 100k events  $X_{sec} = 3.410e+00 \pm 5.298e-03$  pb
- Elastic-Inelastic - 50k events  $X_{sec} = 4.277e+00 \pm 8.935e-03$  pb (50% El-Inel, 50% Inel-El)
- Inelastic-Inelastic - 50k events  $X_{sec} = 4.781e+00 \pm 1.266e-02$  pb



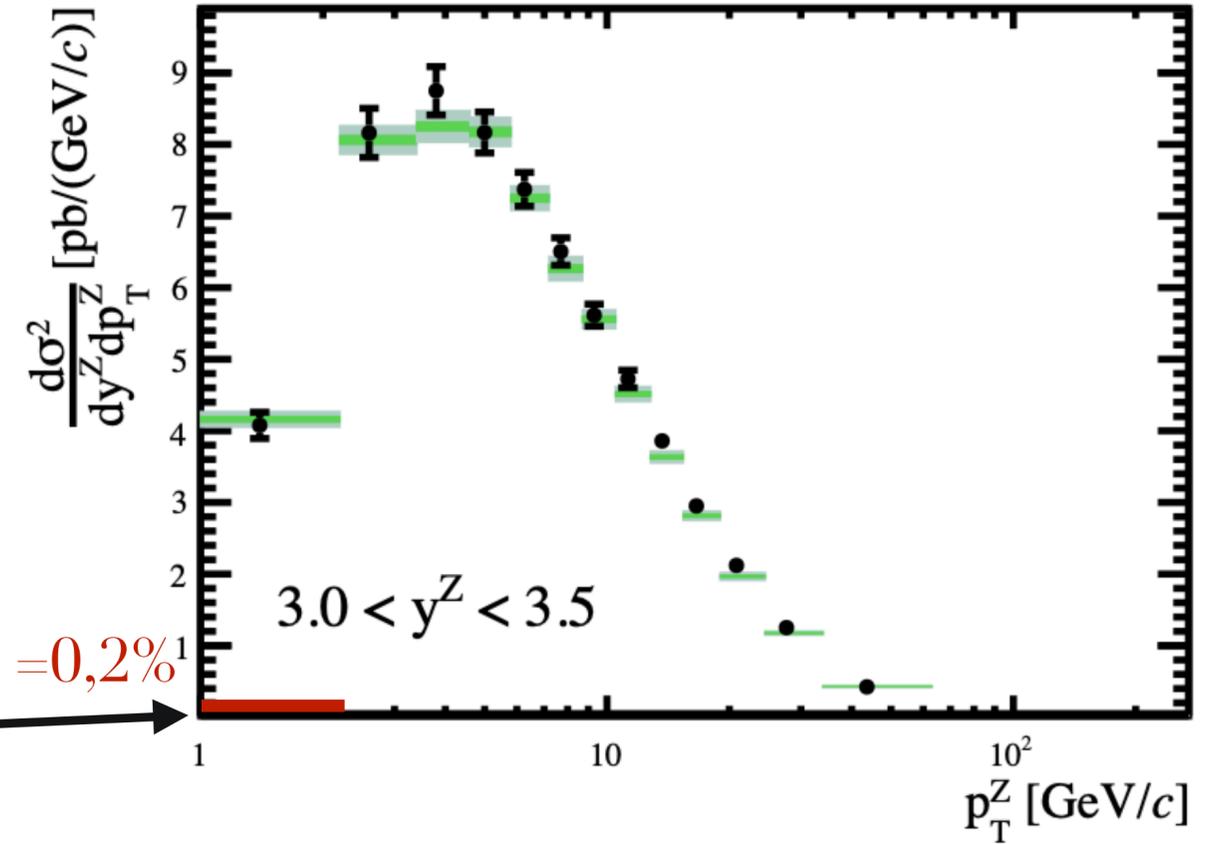
# Results



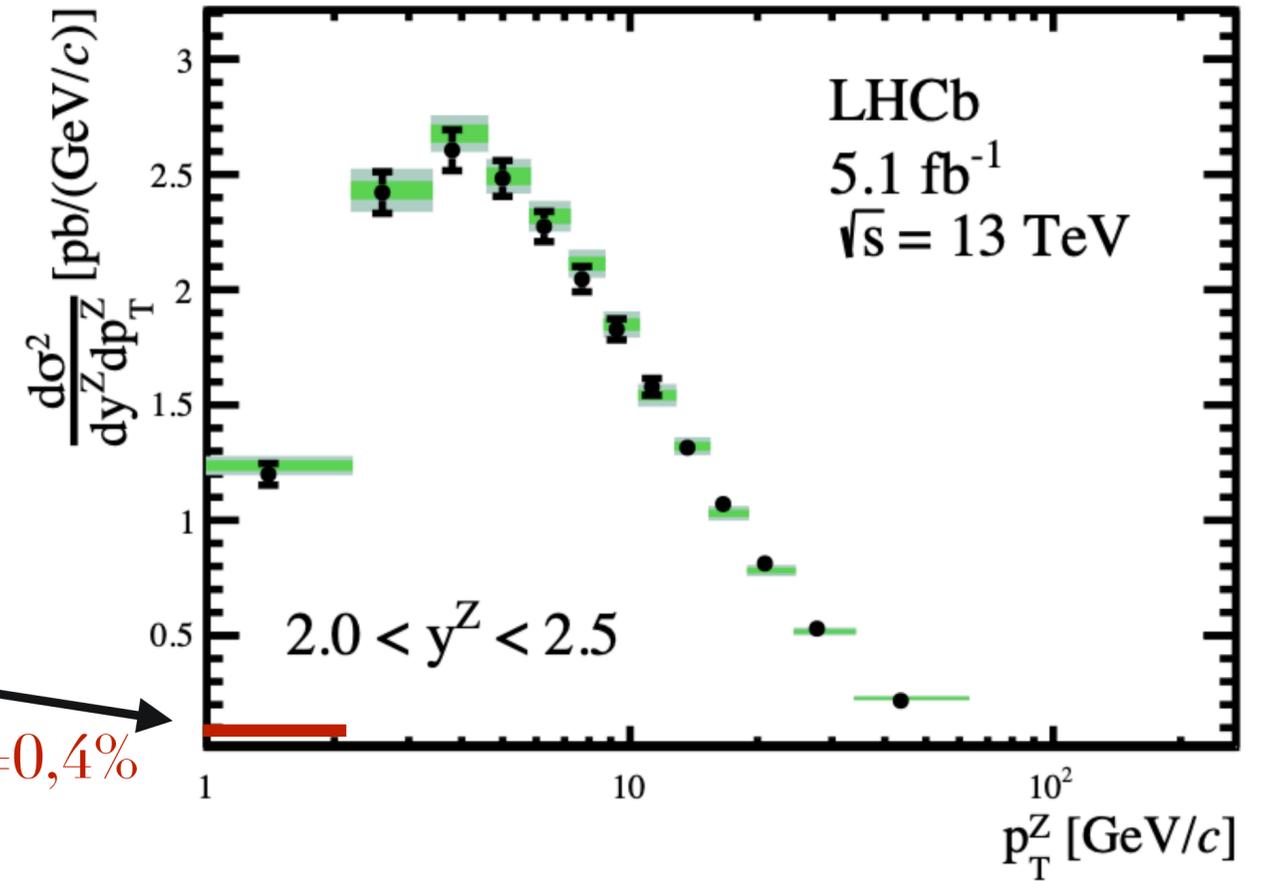
# Results



Total/ 2GeV = 0,2%



Total/ 2 GeV = 0,4%



# Conclusion

- Photon induced background is below 1% (should be checked in all bins)
- histos available on iihe m machines : </user/lfavart/public/TMD/>

# Back-up slides

