

A quality test of SPDrroot 4.1.7:

pp@10 GeV

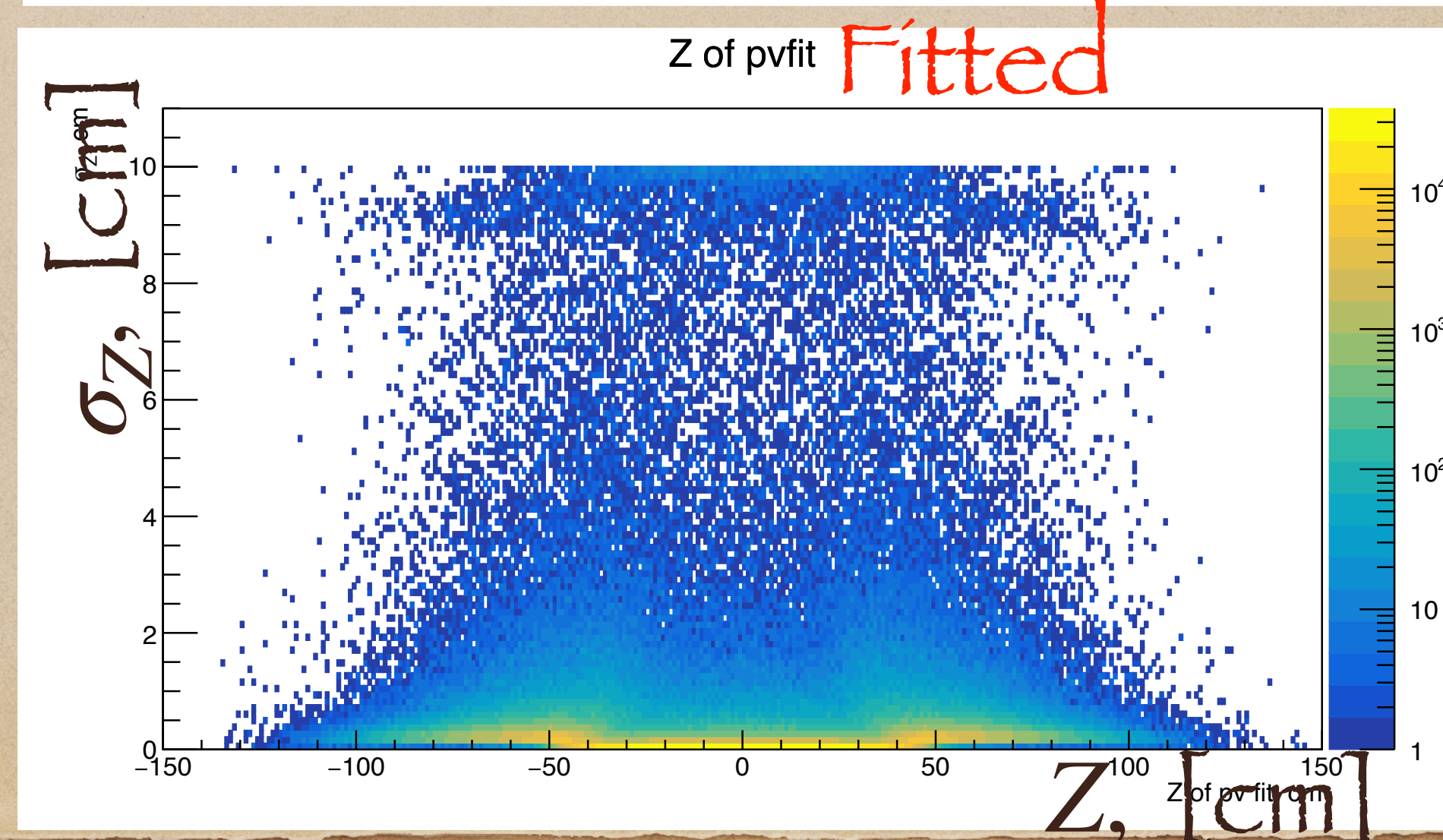
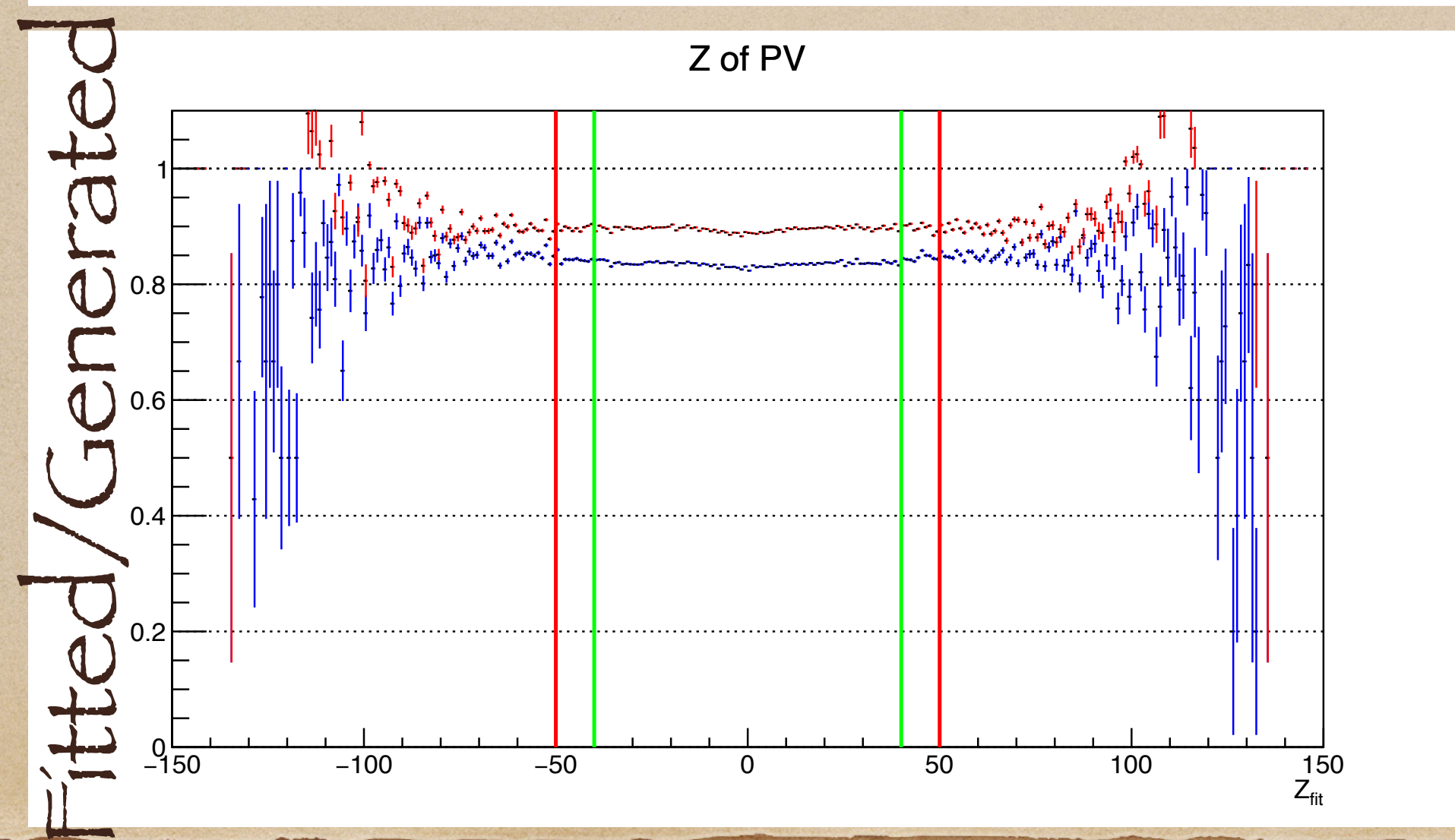
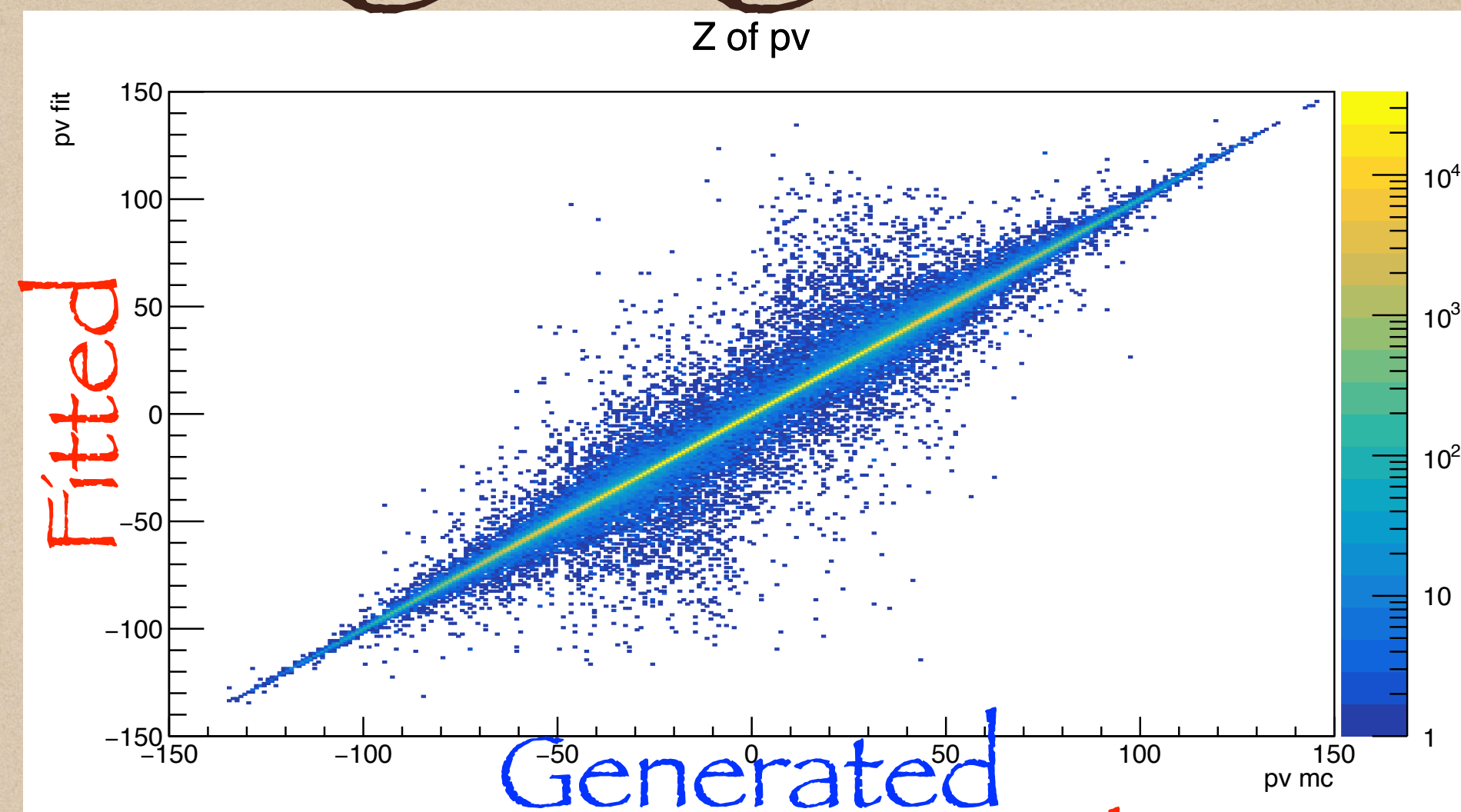
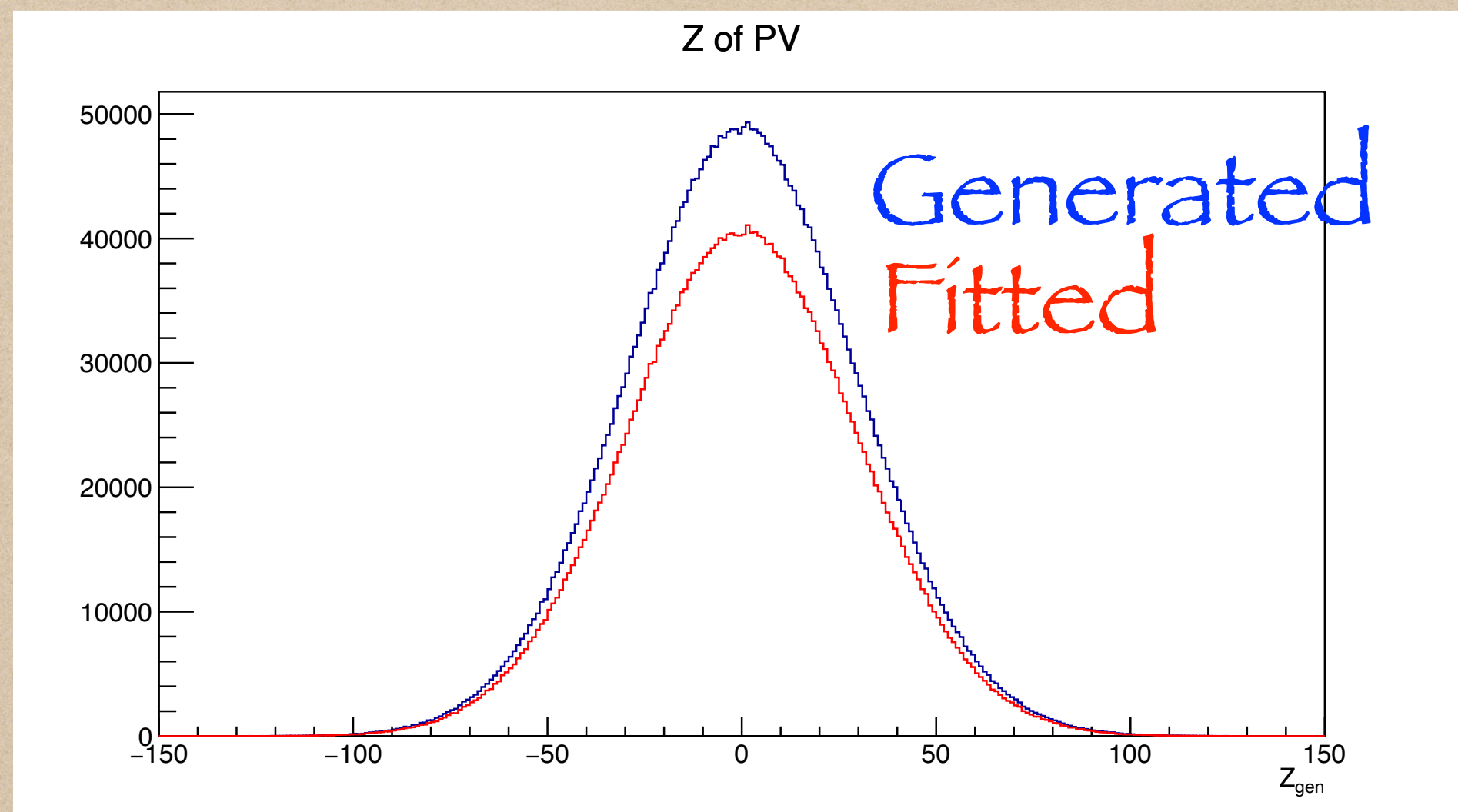
Elena Zemlyanichkina (JINR)

Simulation+Reconstruction

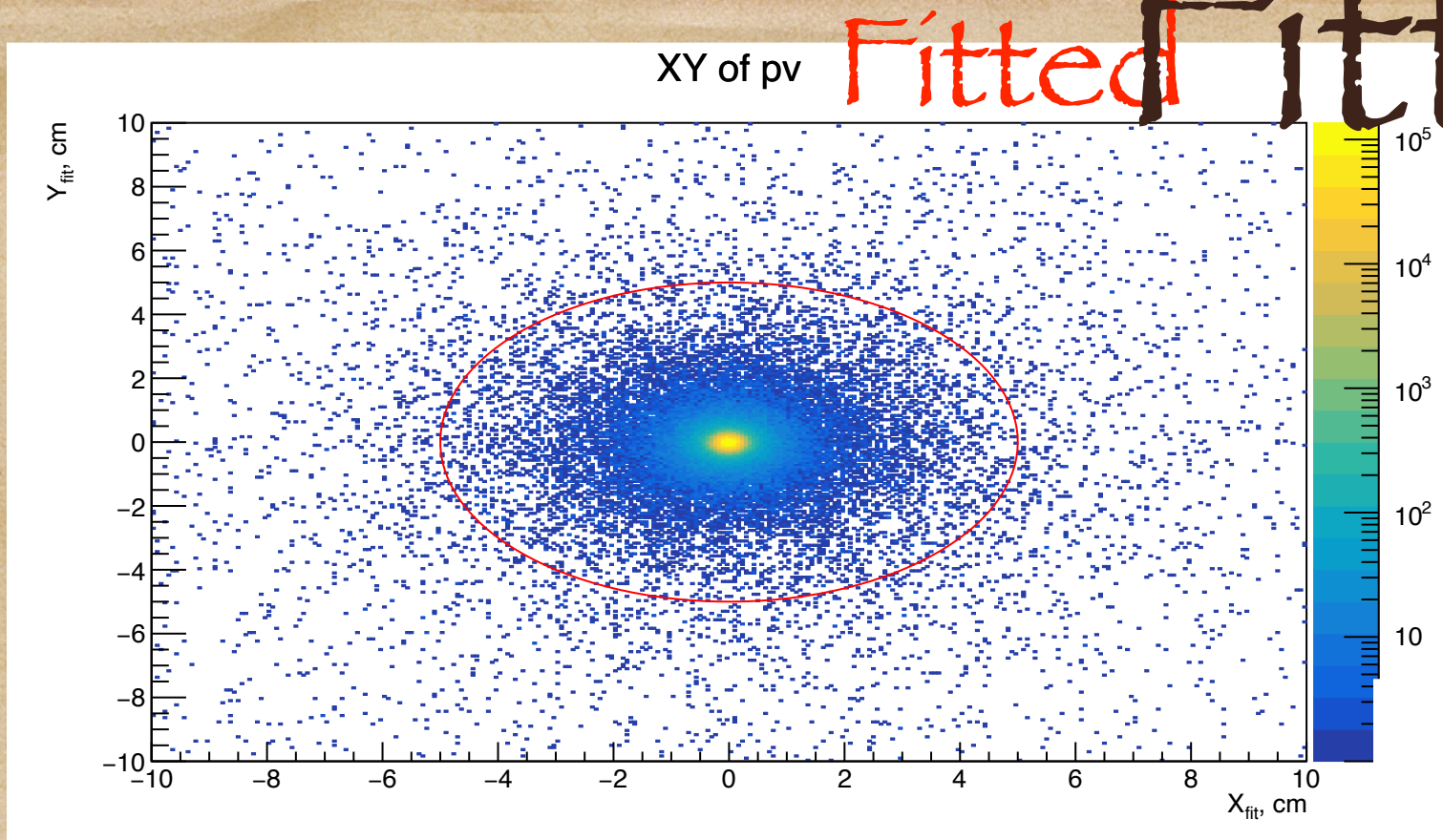
- ◆ pp@10 GeV with Pythia 8 + SPDroot-dev-4.1.7 (~5 000 000 events)
- ◆ Micromegas based Central Tracker ($-40 \text{ cm} < Z < 40 \text{ cm}$, $R = 5 \text{ cm}$)
- ◆ File list: /eos/nica/spd/users/elenazem/productions/spdroot-4.1.7-dev-minbias-10/good_reco_files.txt

Thanks to Artem P. and Danila O.!

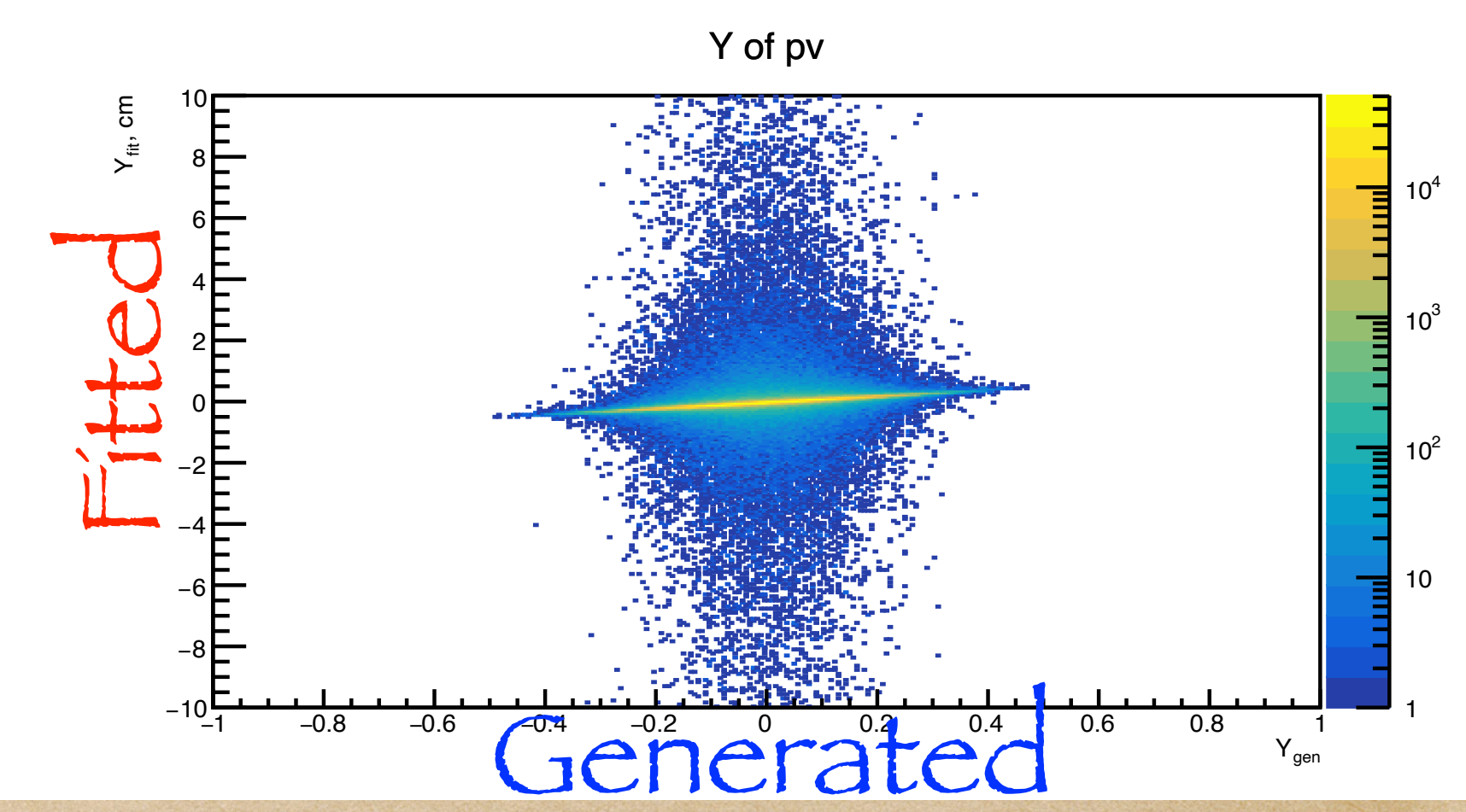
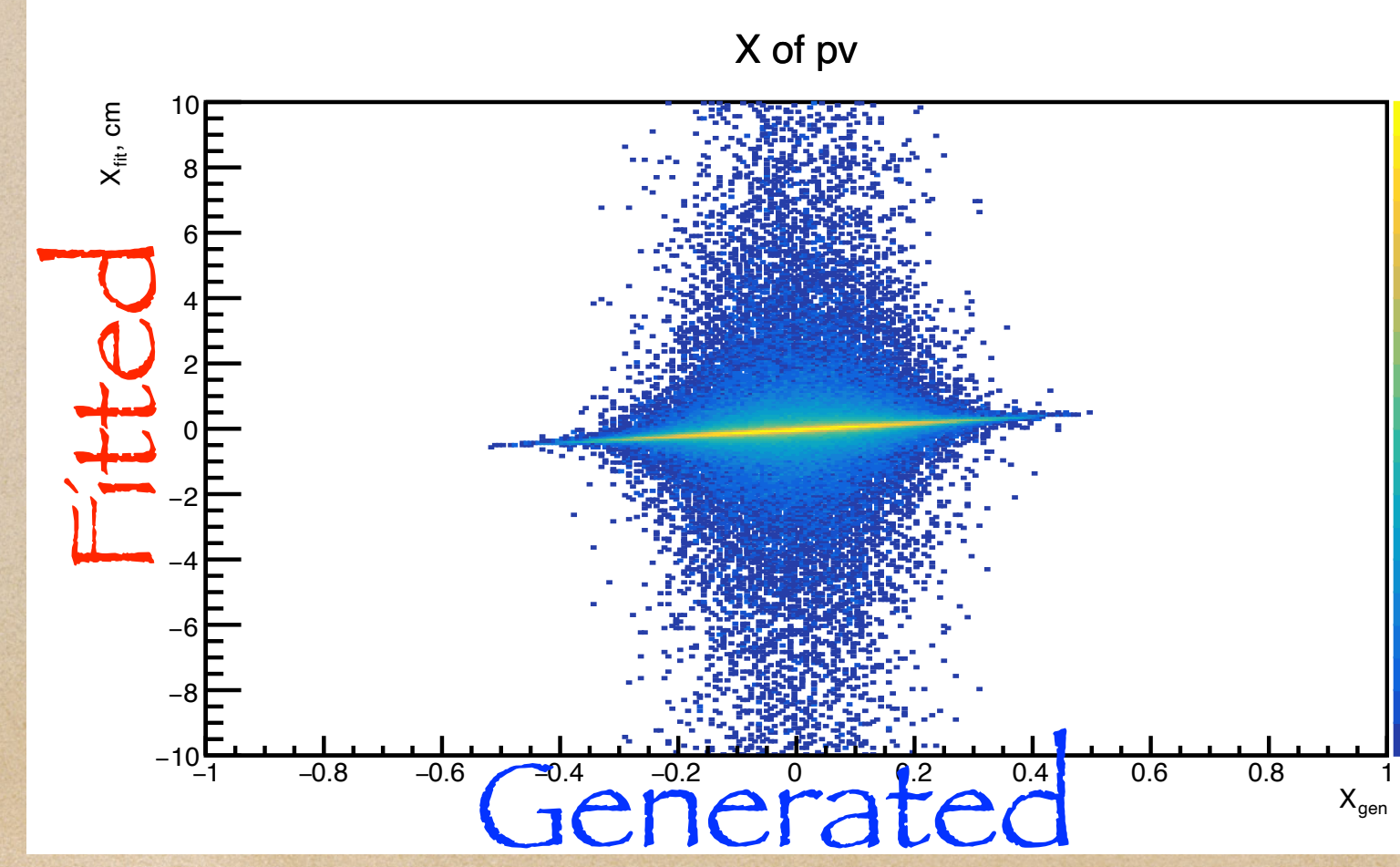
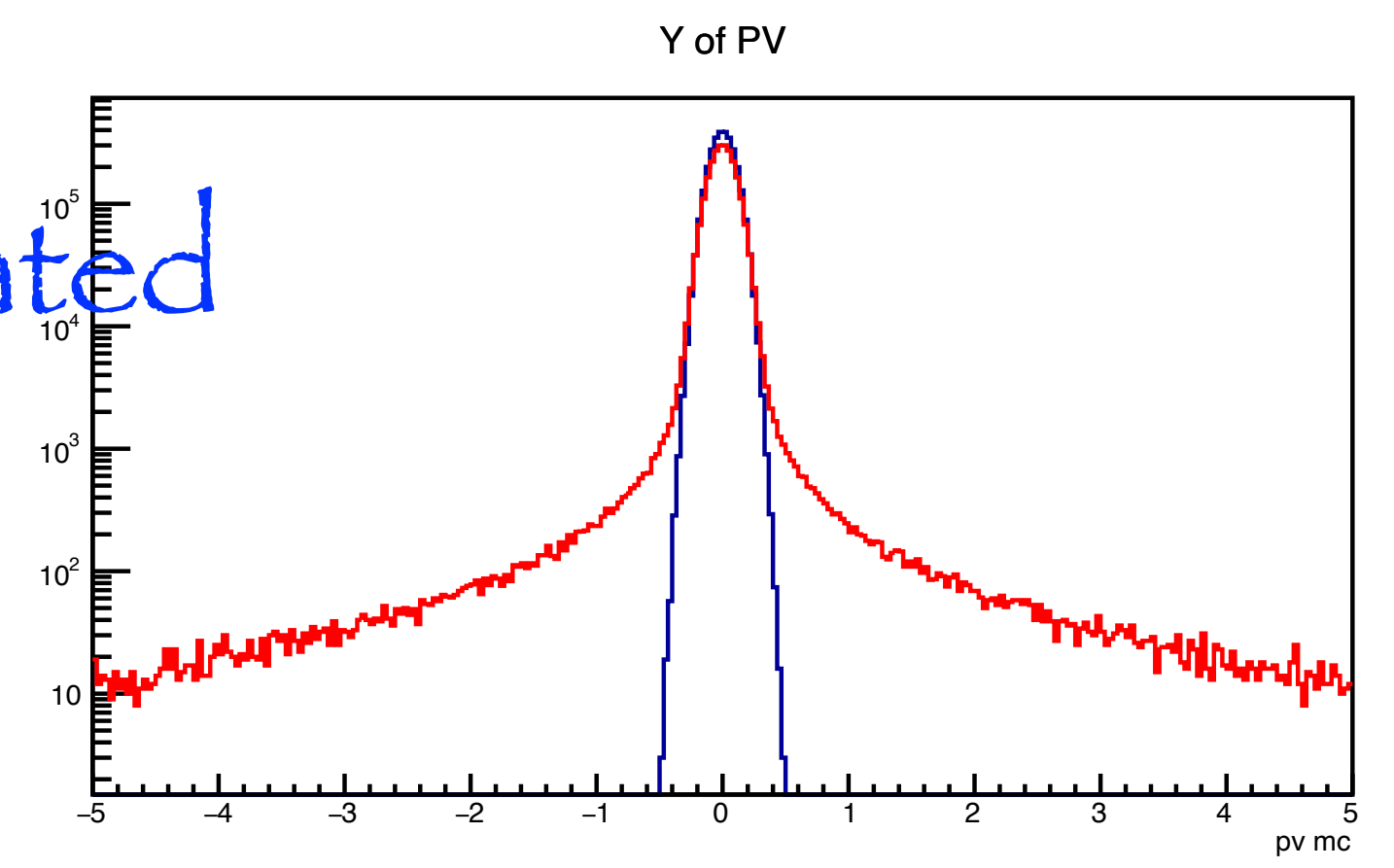
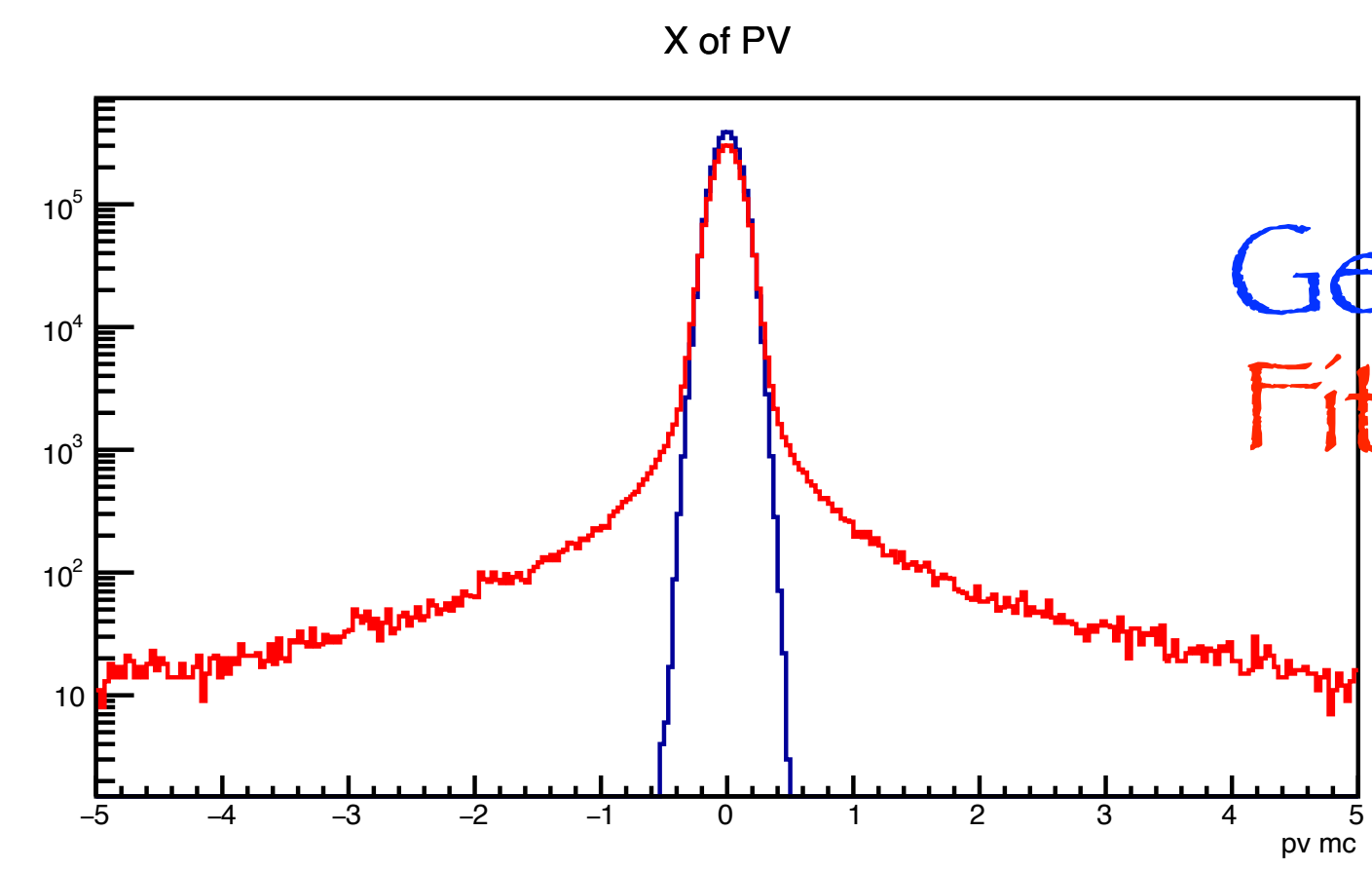
Fitted Primary Vertex Z of PV (2 or more outgoing tracks)



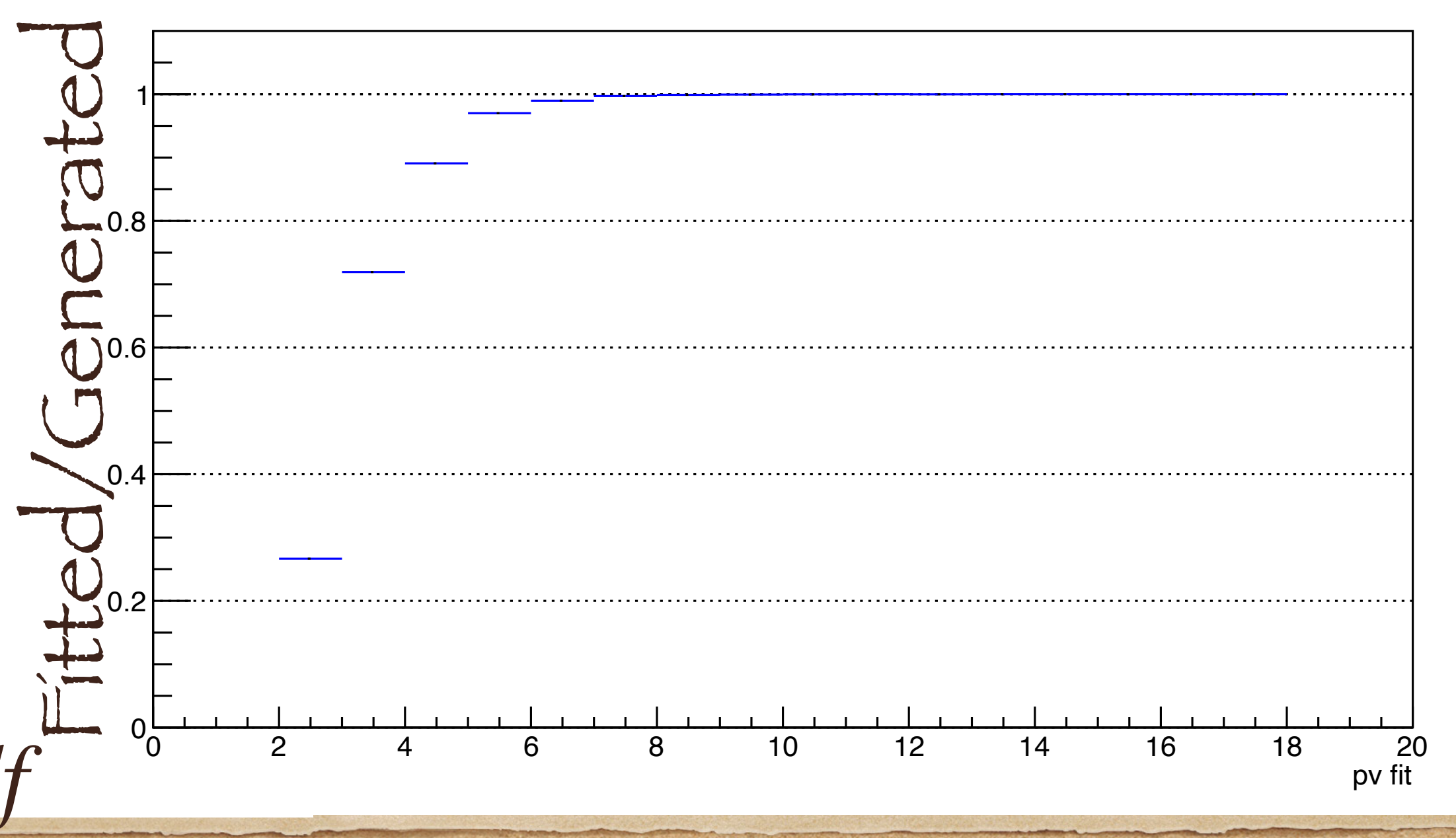
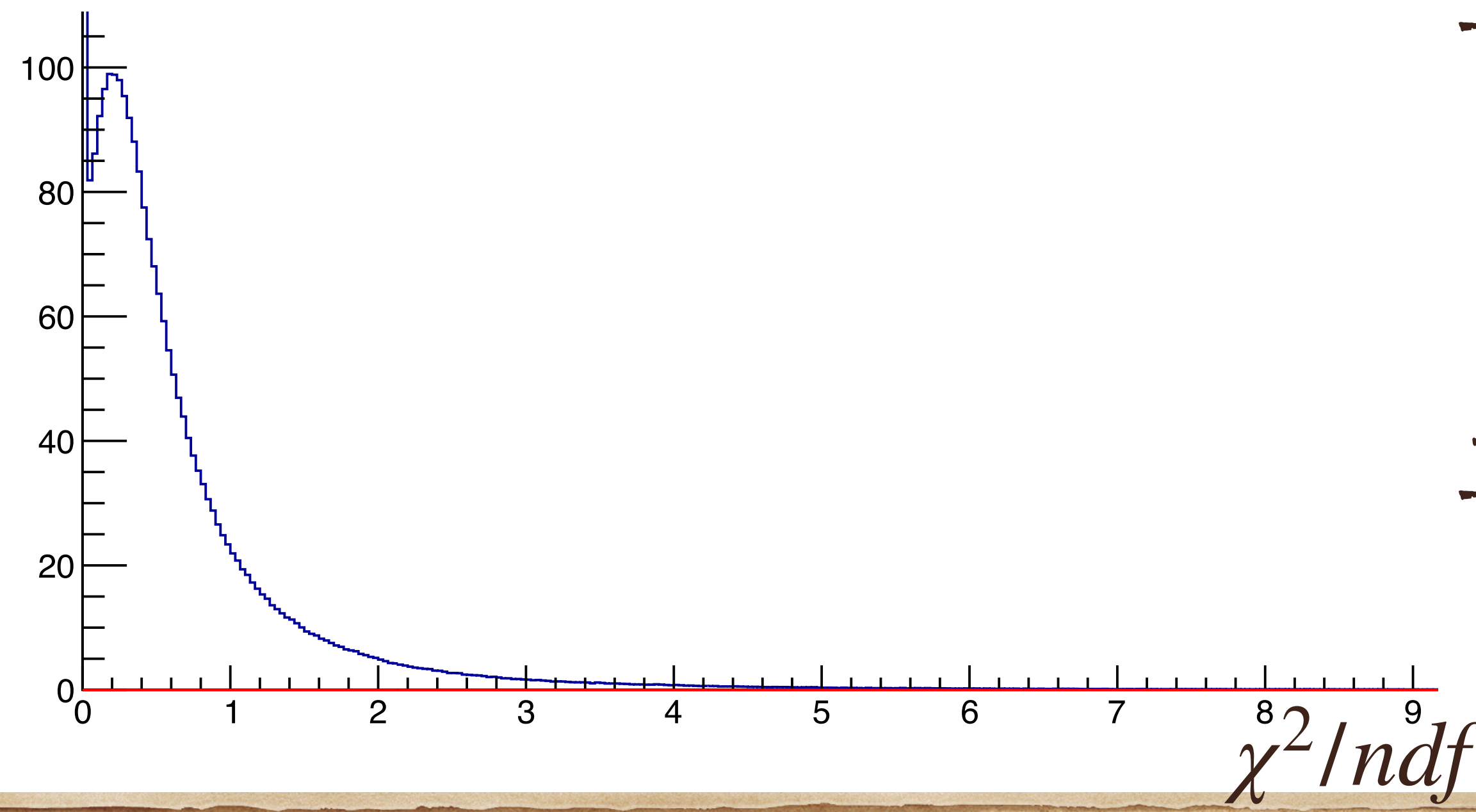
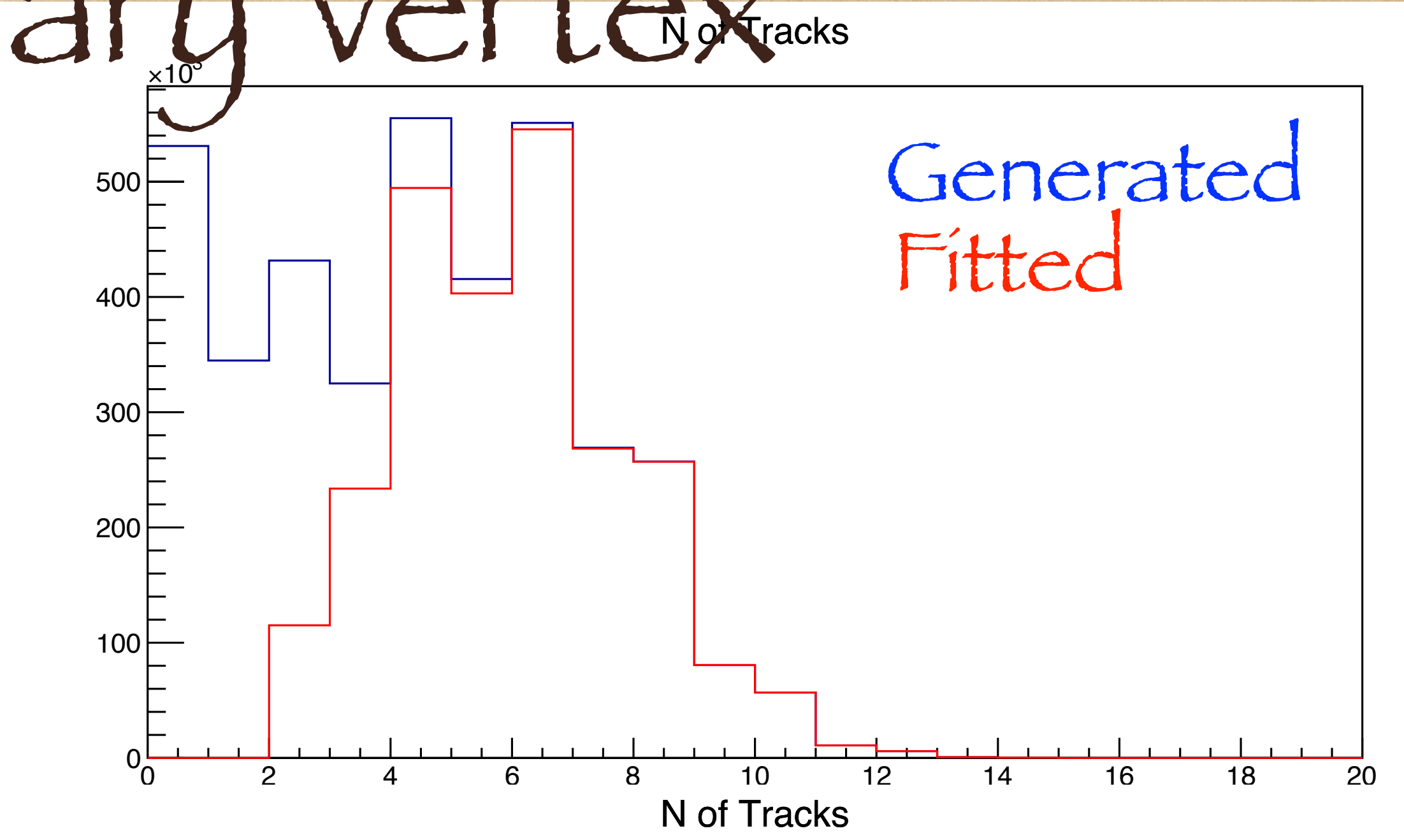
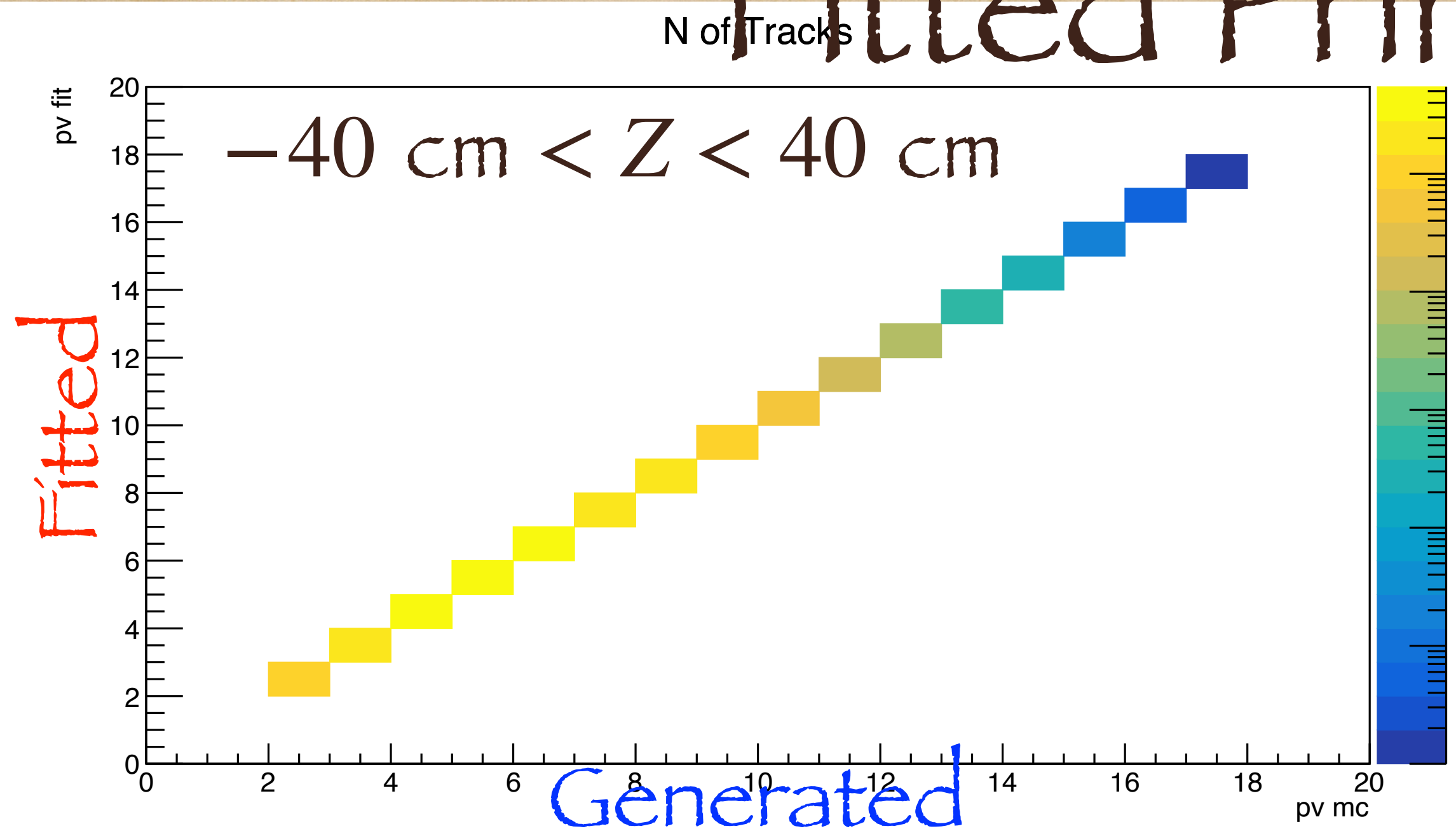
Fitted Primary Vertex X and Y of PV



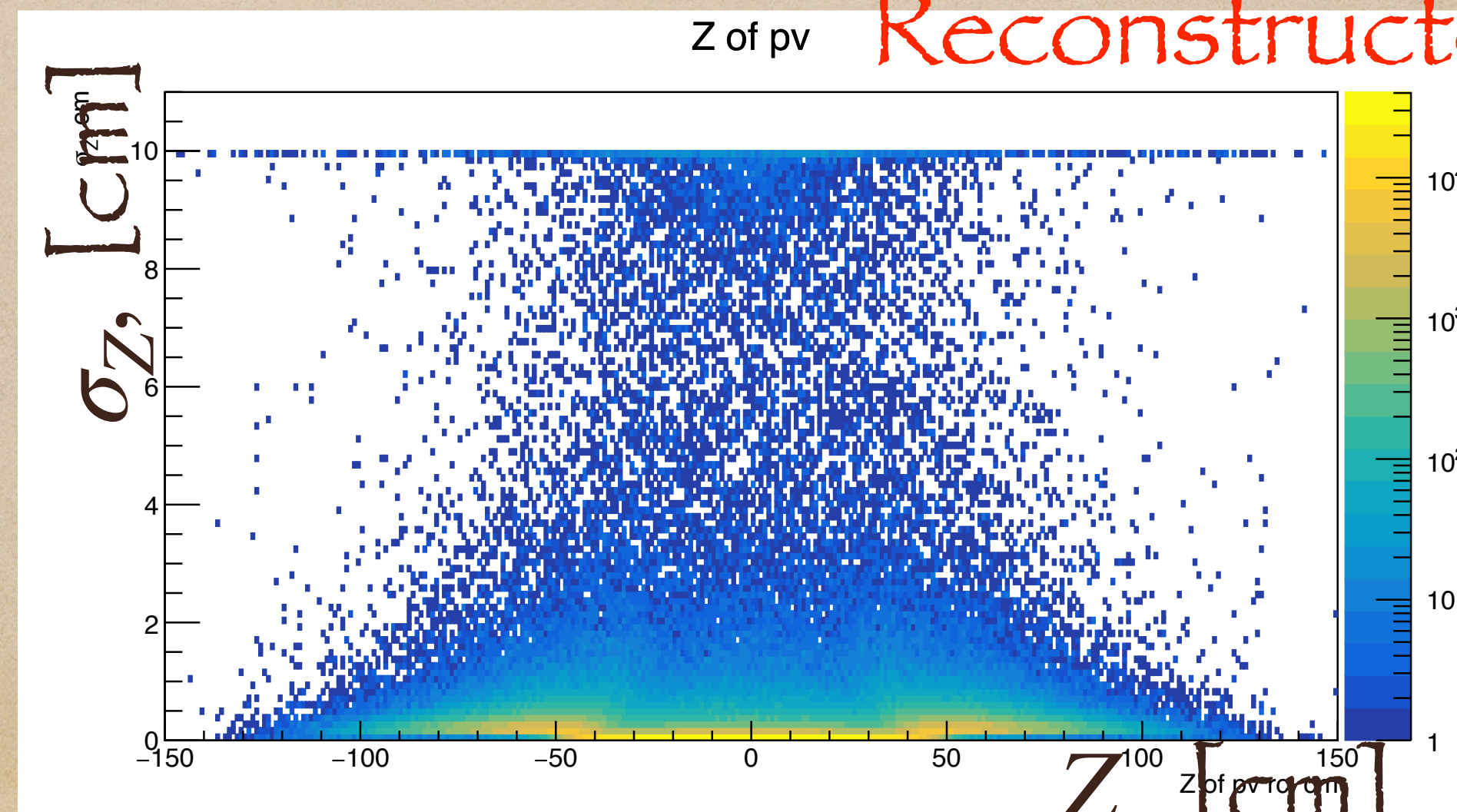
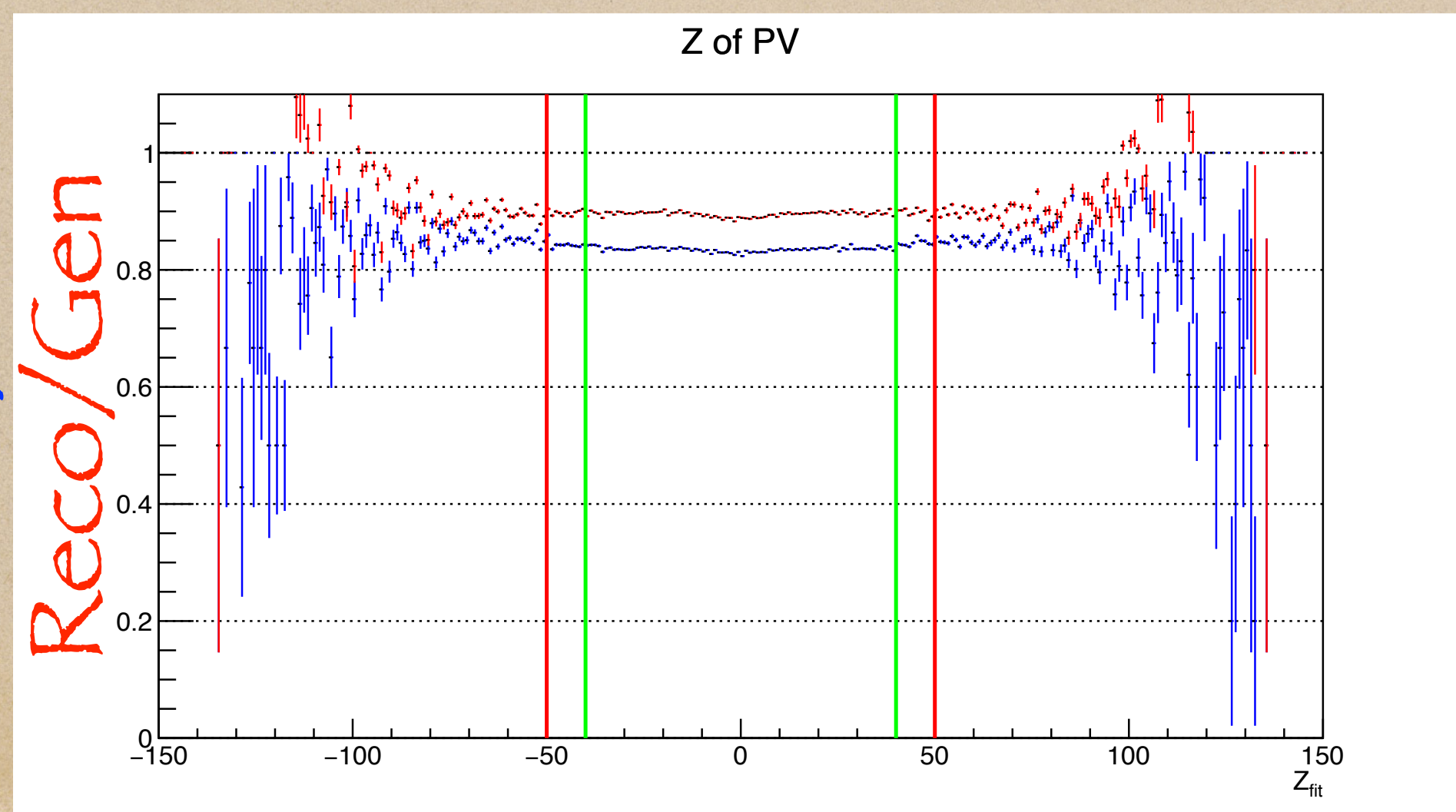
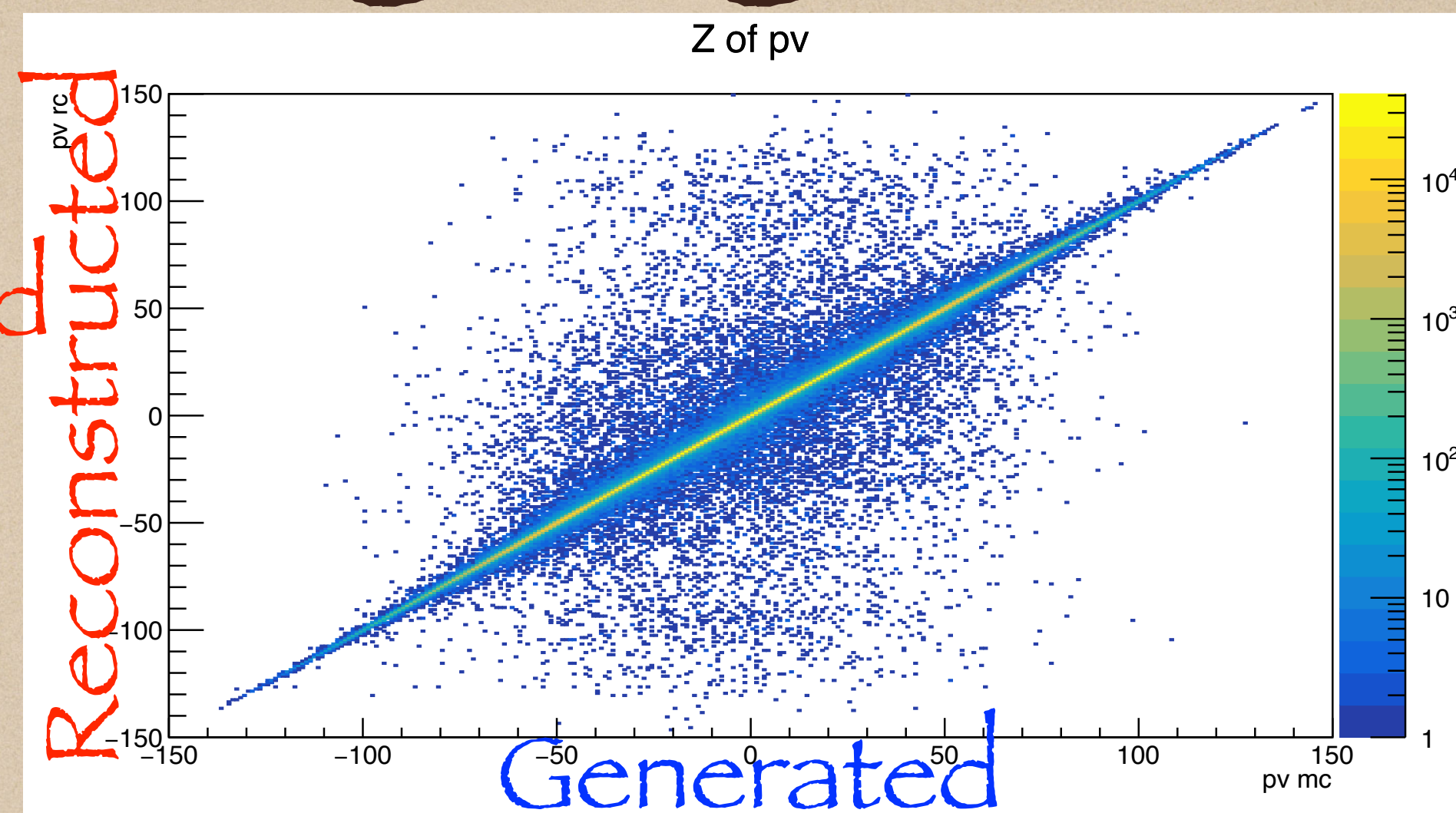
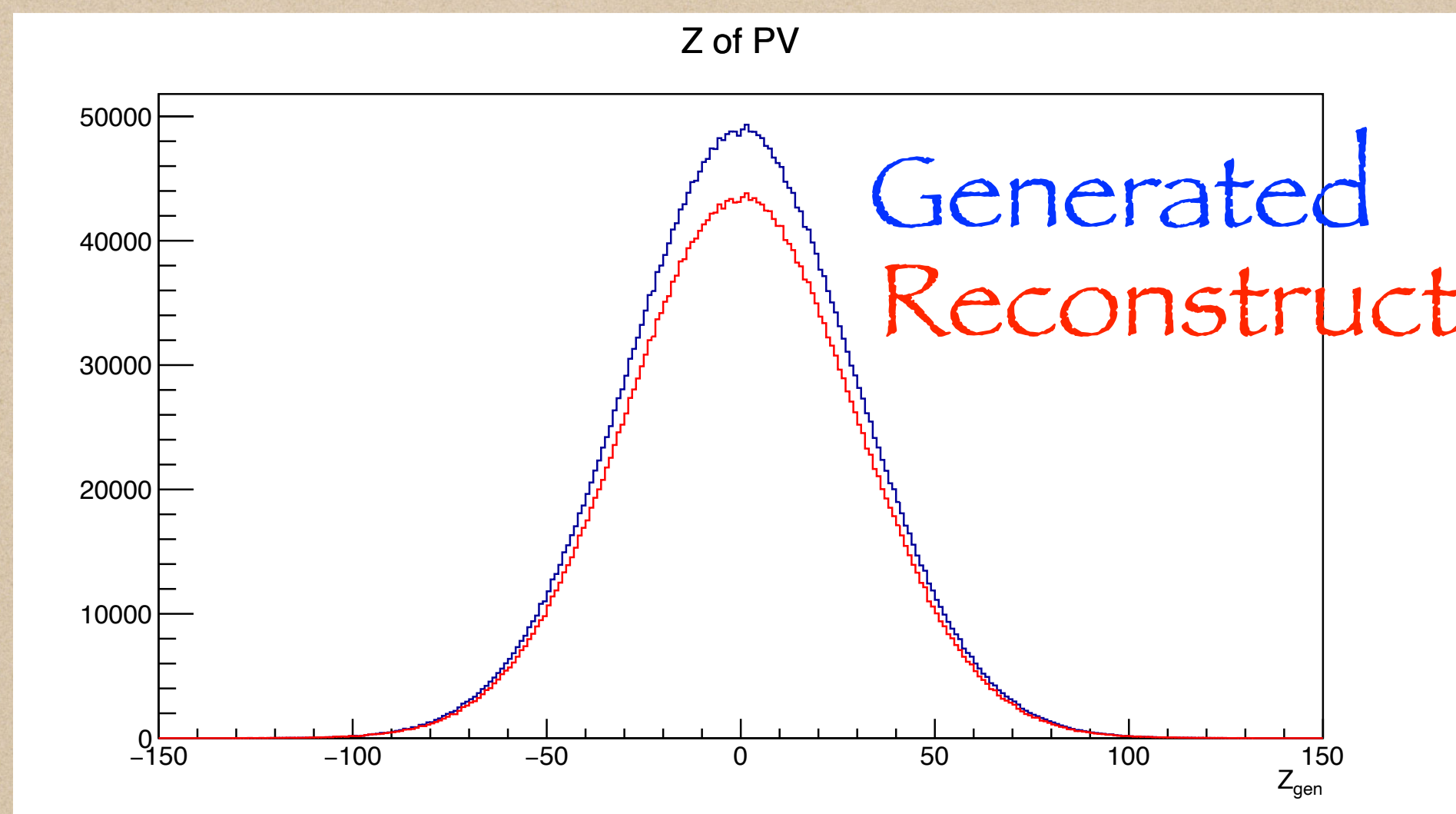
$-40 cm < Z < 40 cm$



Fitted Primary Vertex

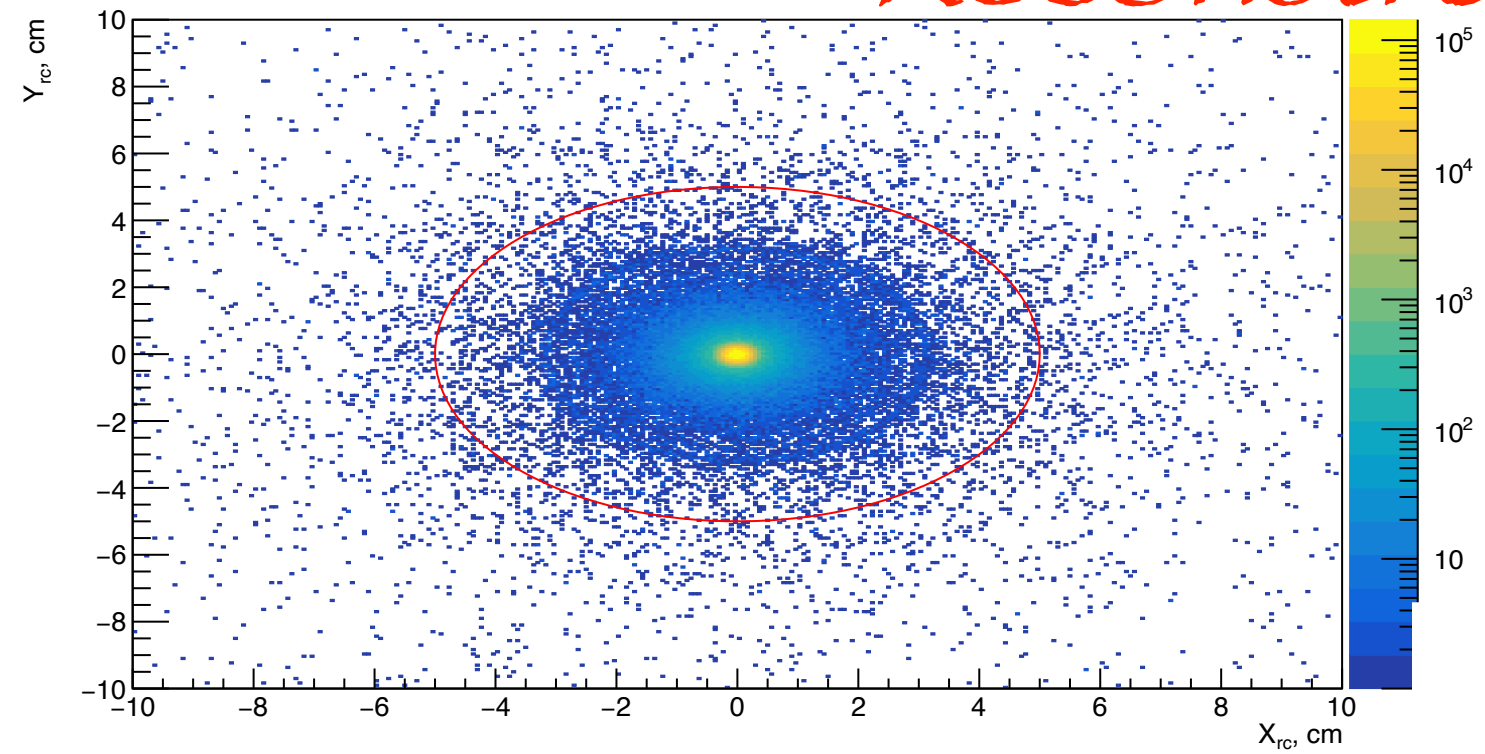


Reconstructed Primary Vertex Z of PV (2 or more outgoing tracks)



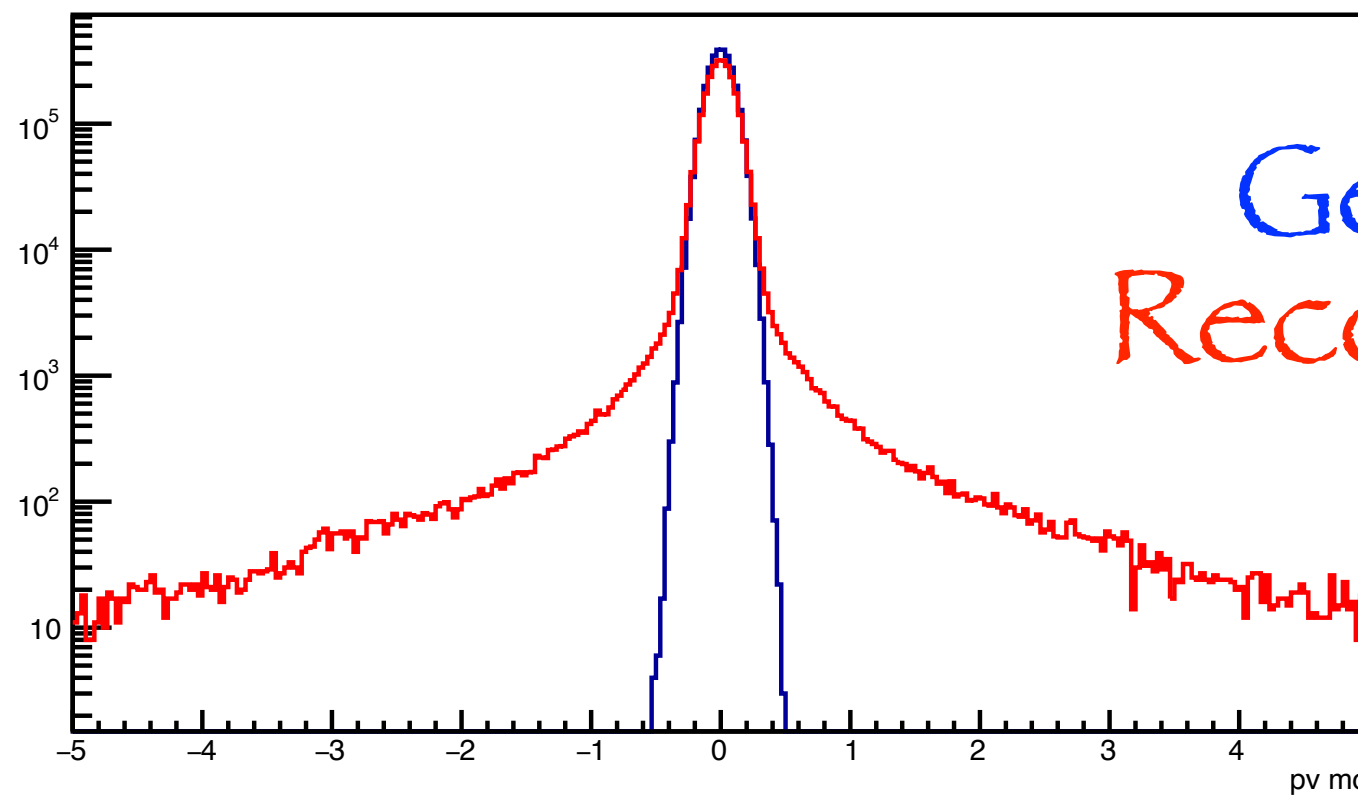
Reconstructed Primary Vertex

X and Y of PV

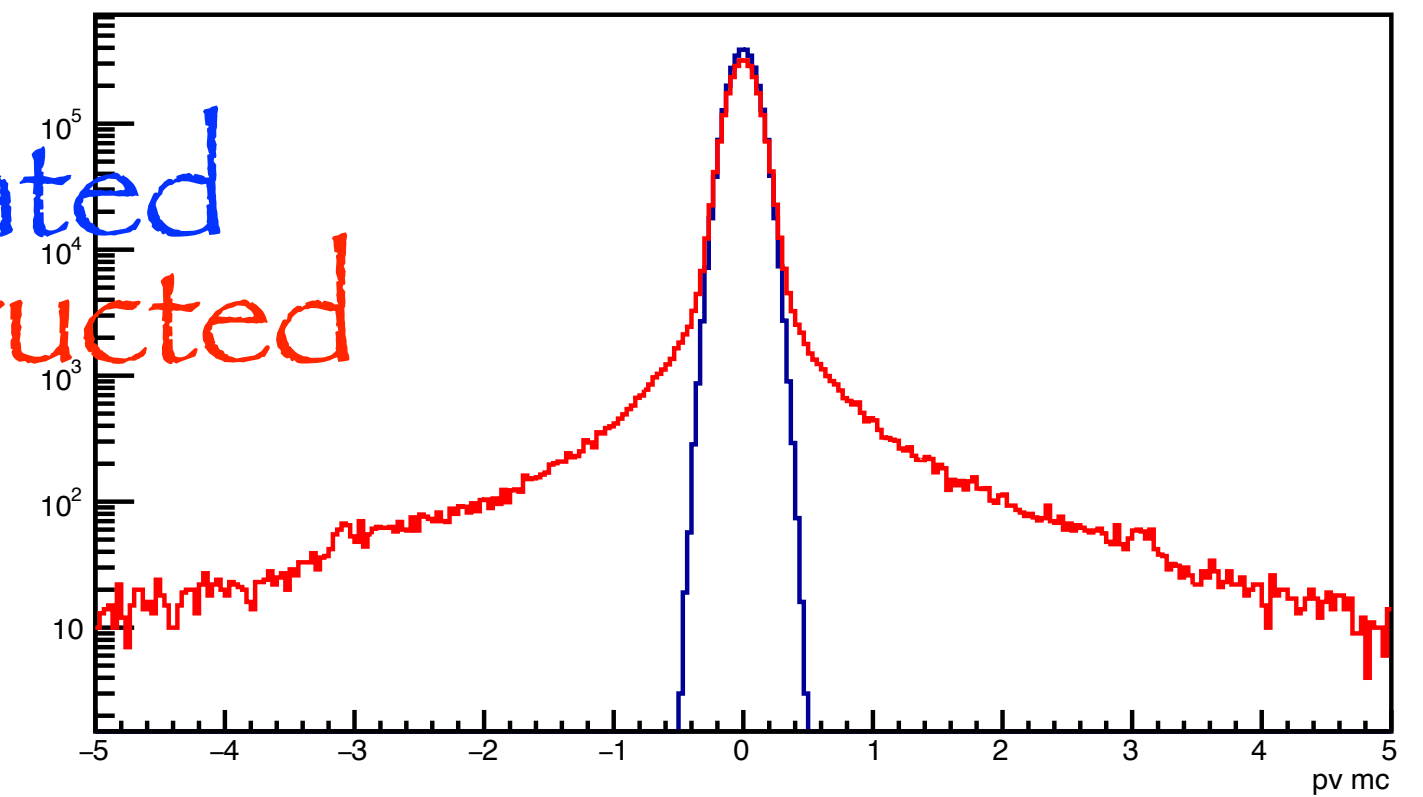


$-40 \text{ cm} < Z < 40 \text{ cm}$

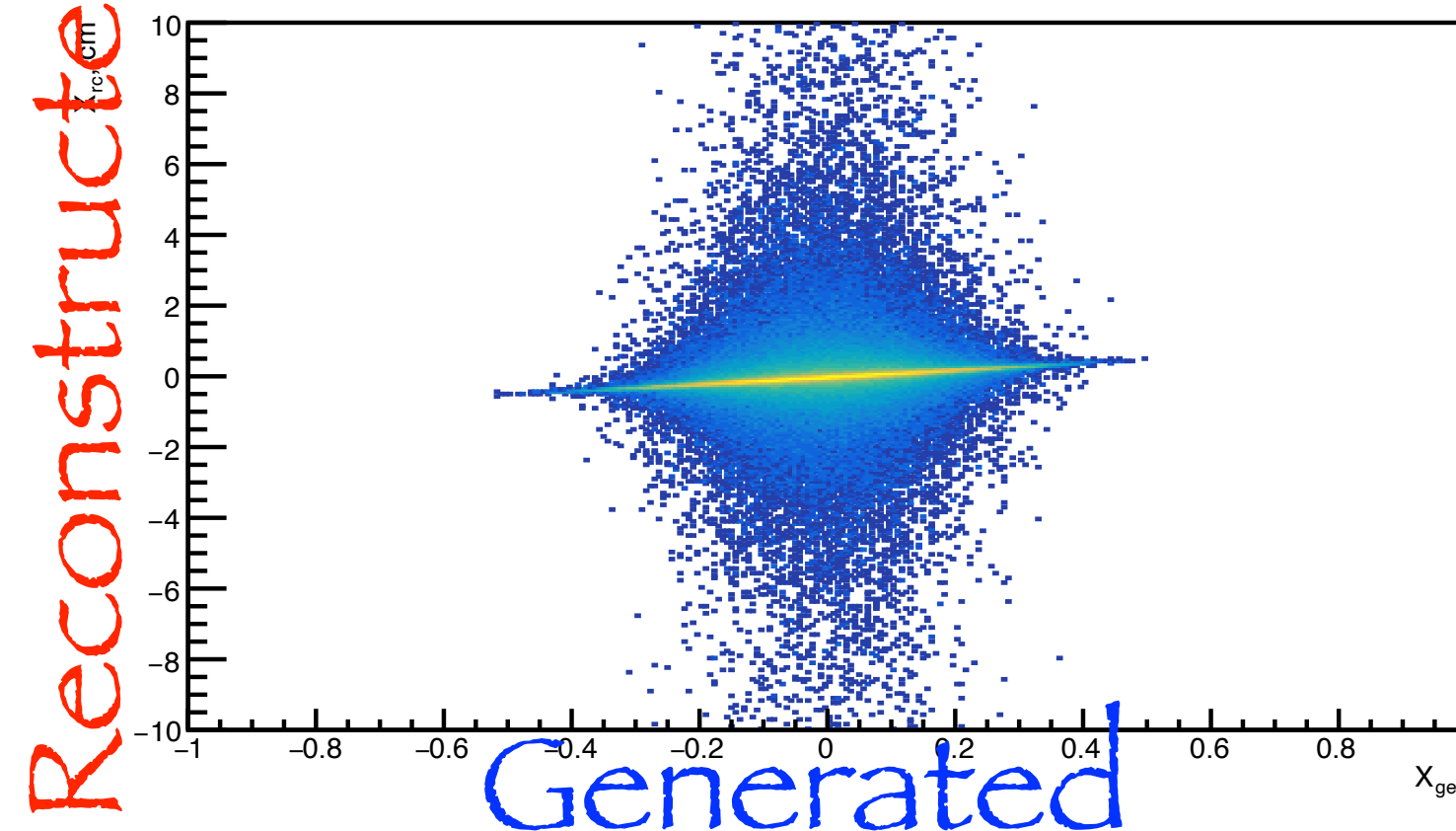
X of PV



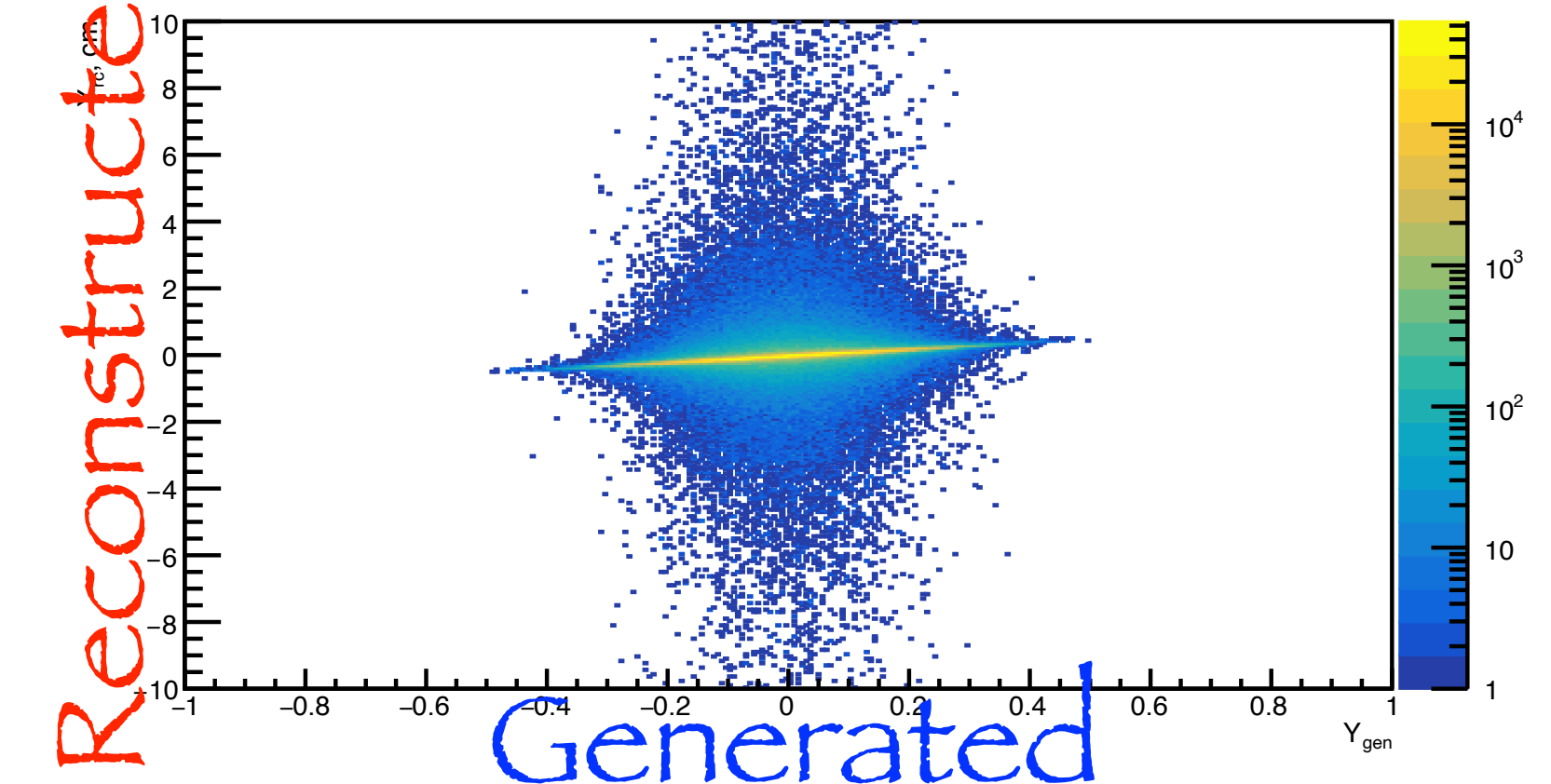
Y of PV



X of pv



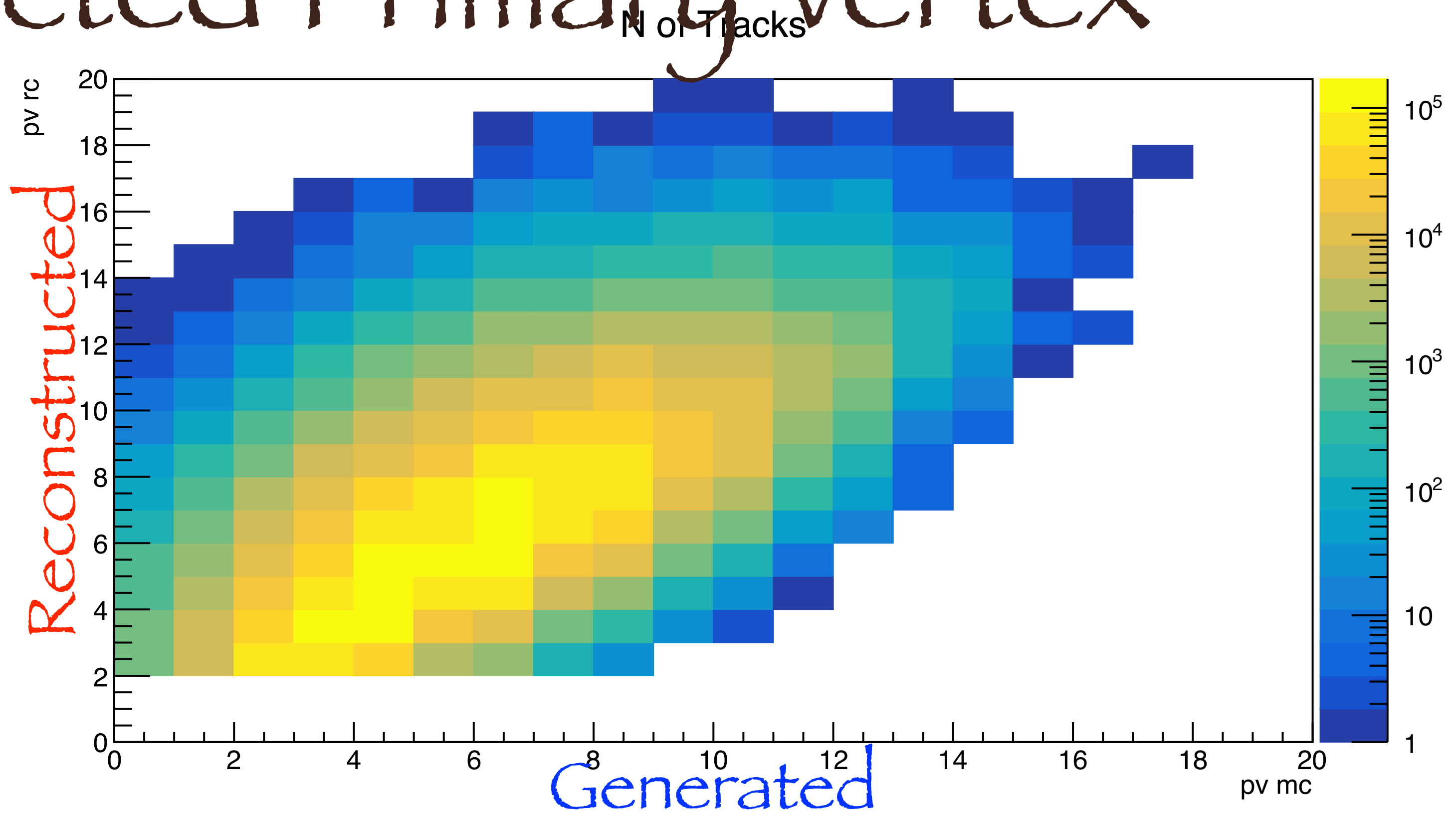
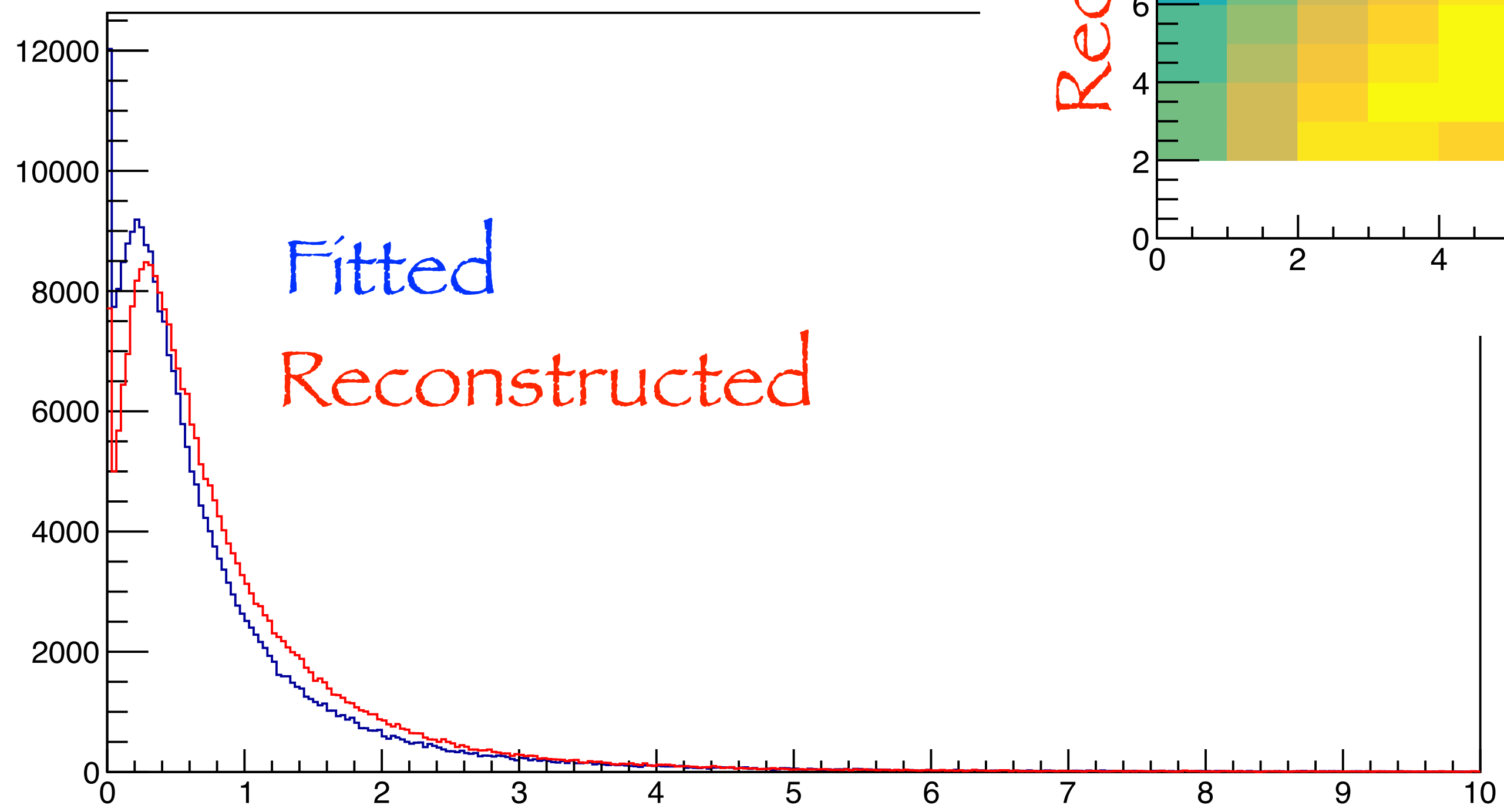
Y of pv



Reconstructed Primary Vertex

$-40 \text{ cm} < Z < 40 \text{ cm}$

χ^2/NDF of PV



Tracking

Primary vertex selection:

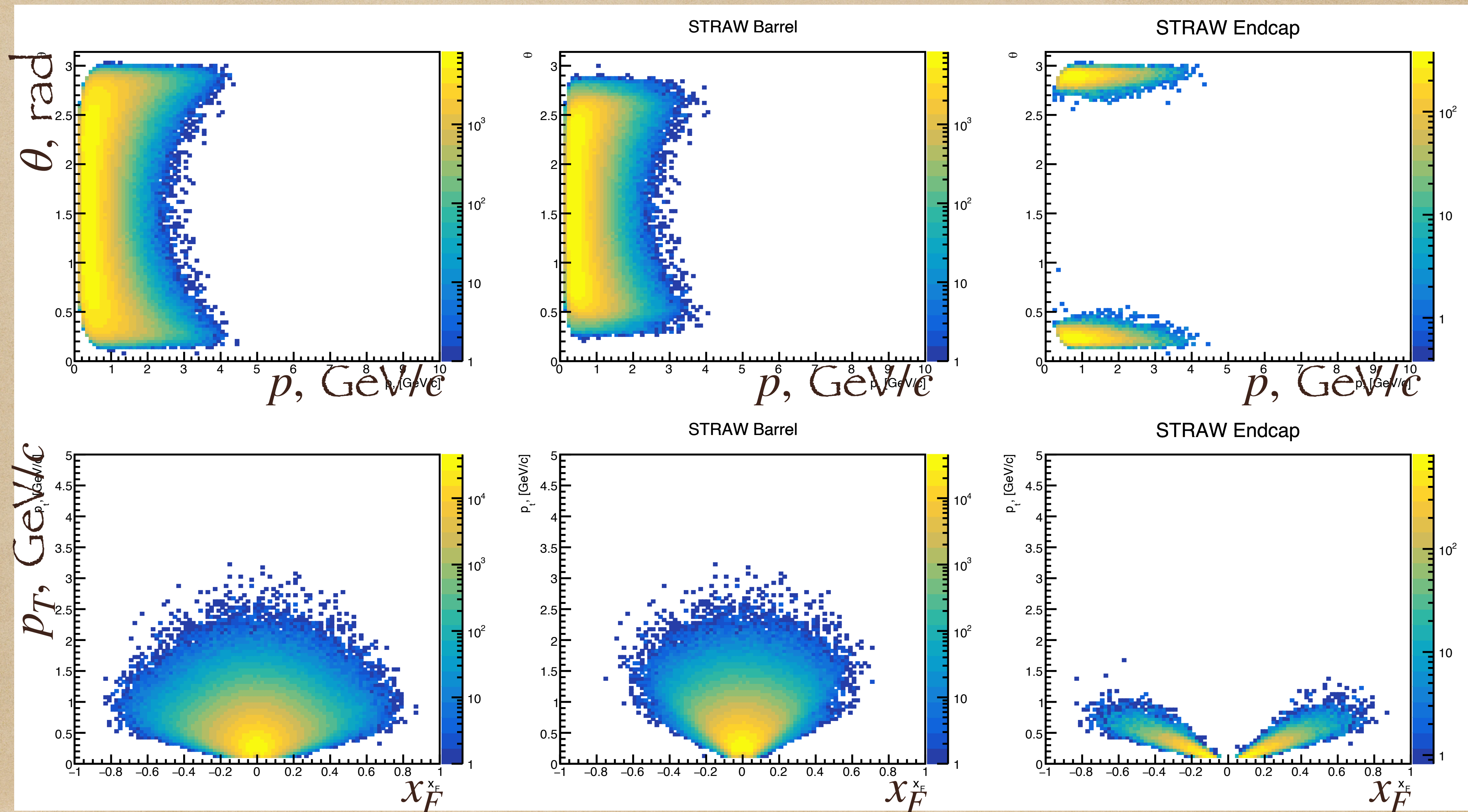
- ◆ $-40 \text{ cm} < Z < 40 \text{ cm}$ and $\sqrt{X^2 + Y^2} < 5 \text{ cm}$

Track selection:

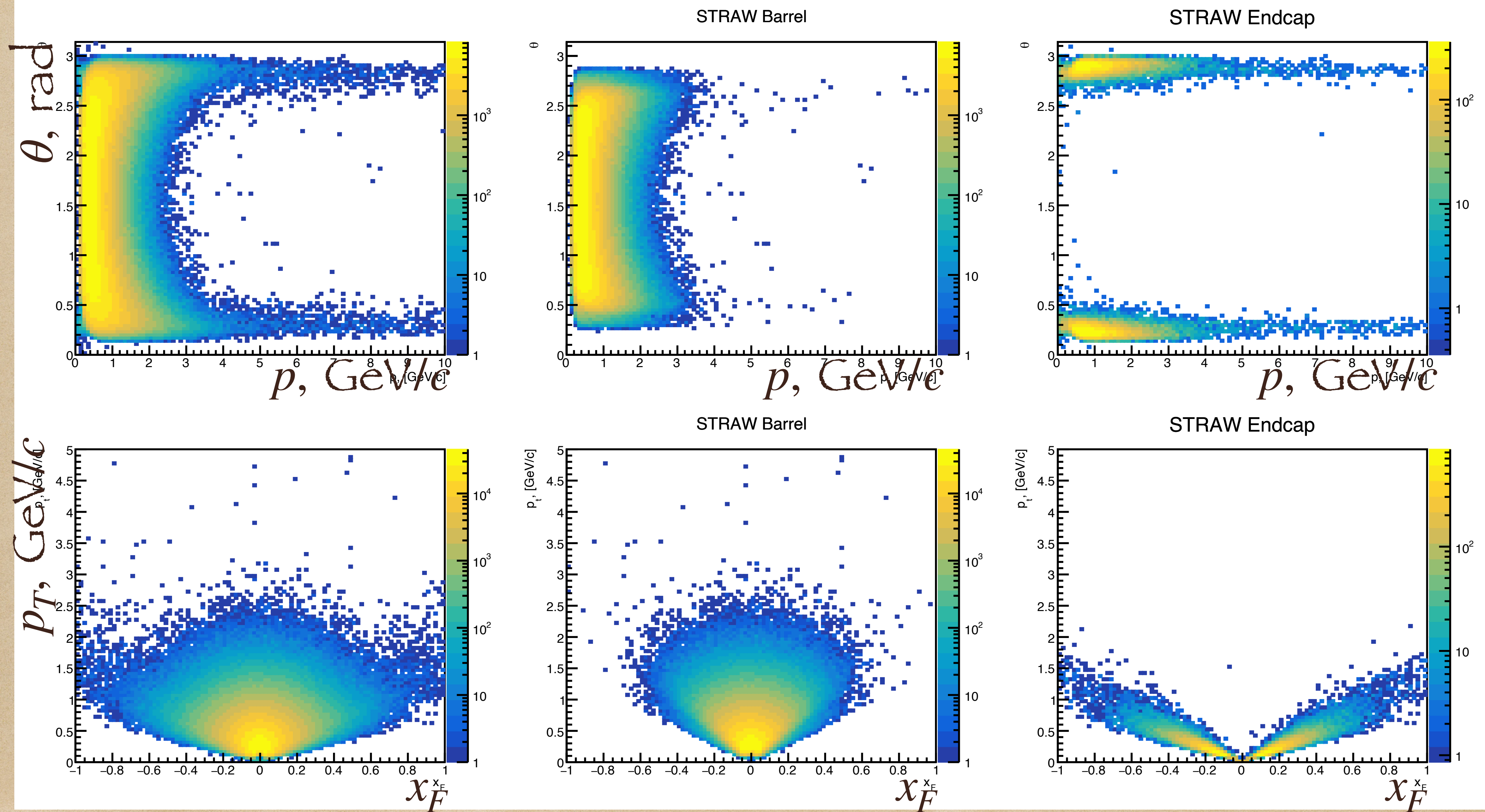
- ◆ All negative tracks produced in PV (fitted, convergency! \neq 0)
- ◆ Number of STRAW hits $N_{STRAW \text{ hits}} \geq 16$
- ◆ Options for track reconstruction:

- `CheckMinItsHits(true, 0);`
- `CheckMinTsHits(true, 6);`
- `CheckMinHits(true, 7);`
- `Check MinPartPt(true, 0.1);`
- `CheckMinPartMomentum(true, 0.15);`

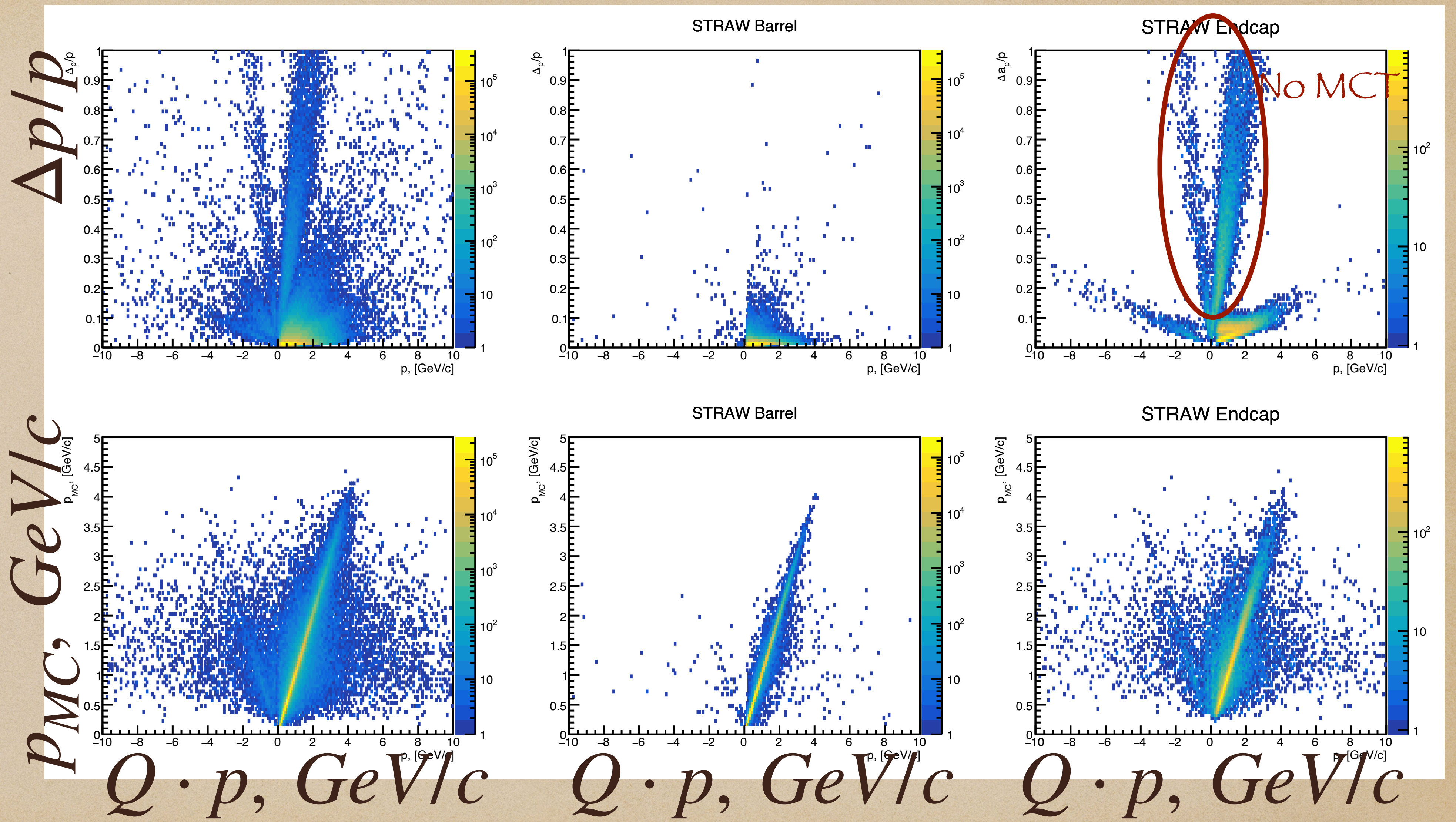
Generated values for Fitted tracks



Reconstructed values for Fitted tracks



Reconstructed values for Fitted tracks



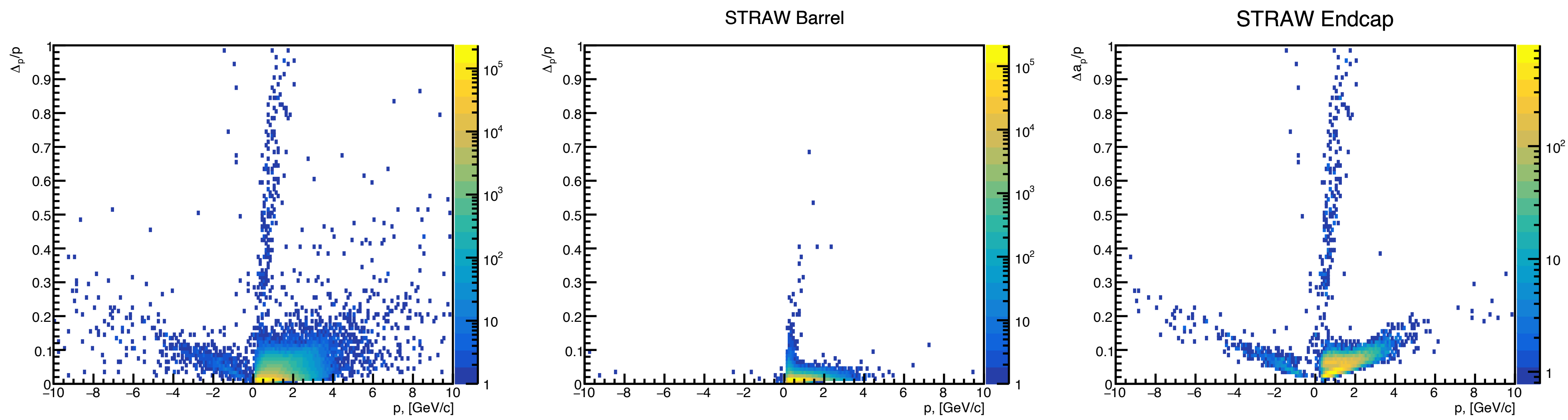
Negative Qp : charge changed sign during the fit procedure

Conclusion

- ◆ 5 000 000 events available at JINR (more data come soon)
- ◆ Fit of PV works good with 5 and more outgoing tracks
- ◆ Fit of primary tracks gives correct results if MCT hit exists
- ◆ The work will be continued

Reconstructed values for Fitted tracks

$\Delta p/p$



p_{MC} , GeV/c

