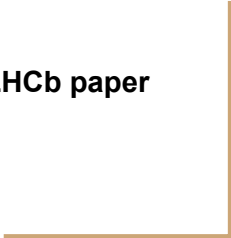


Status report

χ^2 calculation for LHCb paper



Introduction

- Files:
/afs/cern.ch/user/j/jung/work/public/ForItanaSara/cascade-3.3.1_beta02-DYbias-MarkusRivetFix-hepmc2-DY-13TeV-aMCatNLO-lhescale3-MaxFactor=1.0-ktmin=0.02-Showerscale=-Onshell=1-QED=1-Had=0-TimeShower=1-SpaceShower=0-lglu=110*00-Unc=0_merged.yoda
- Makeband.py script -> *full_correlated.yoda -> scale uncertainty as a correlated uncertainty (instead of independent)
- Code version: rivet-mkhtml-lhcewwg-cutsHannes
 - Normalisation:
 - SumDat = values['data'].copy().sum()
 - SumMc = values['mc'].copy().sum()
 - ScaleFactorNew=SumDat/SumMc
- No. bins: **5**
- Correlated='.*model.*,.*luminosity.*,.*Lumi.*,.*Others.*,.*Backgrounds.*,.*Jet.*,.*Lepton.*,.*Others.*,.*TMD.*,.*SCALE.*,.*correlated.*'
- UnCorrelated='.*Efficiency.*,.*stat.*,.*Stat.*,.*uncor.*,.*Uncor.*,.*uncorrelated.*,.*Syst.*'
- Analysis: **LHCb_2022_I1990313**

LHCb_2022_11990313 - Transverse Momentum of Z

chi2

31.78 (corrs), 11.49 (no corrs),
31.74 (corrs), 11.44 (no corrs),
30.94 (corrs), 11.09 (no corrs),
27.73 (corrs), 9.47 (no corrs),
19.42 (corrs), 6.35 (no corrs),
18.61 (corrs), 5.84 (no corrs),
18.72 (corrs), 5.62 (no corrs),
23.06 (corrs), 6.78 (no corrs),
30.78 (corrs), 9.16 (no corrs),
37.61 (corrs), 11.14 (no corrs),
44.12 (corrs), 13.62 (no corrs),
58.46 (corrs), 18.20 (no corrs),
140.27 (corrs), 45.48 (no corrs),
247.90 (corrs), 81.15 (no corrs),

LHCb_2022_11990313 - Transverse Momentum of Z

chi2

31.78 (corrs),	11.49 (no corrs),
31.74 (corrs),	11.44 (no corrs),
30.94 (corrs),	11.09 (no corrs),
27.73 (corrs),	9.47 (no corrs),
19.42 (corrs),	6.35 (no corrs),
18.61 (corrs),	5.84 (no corrs),
18.72 (corrs),	5.62 (no corrs),
23.06 (corrs),	6.78 (no corrs),
30.78 (corrs),	9.16 (no corrs),
37.61 (corrs),	11.14 (no corrs),
44.12 (corrs),	13.62 (no corrs),
58.46 (corrs),	18.20 (no corrs),
140.27 (corrs),	45.48 (no corrs),
247.90 (corrs),	81.15 (no corrs),

LHCb_2022_11990313- Transverse Momentum of Z

chi2

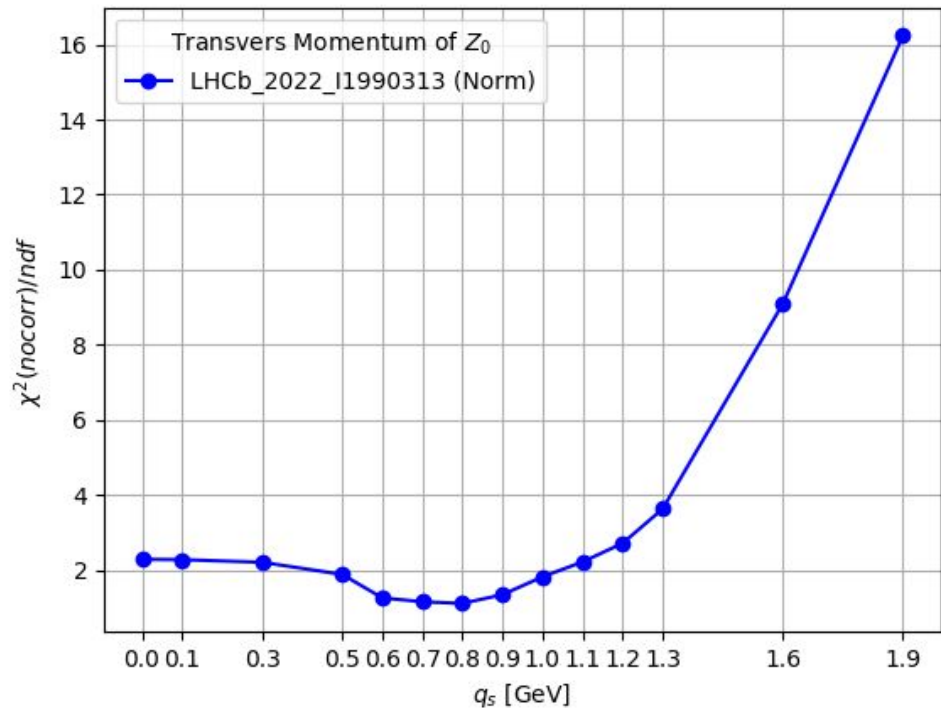
31.78 (corrs), 11.49 (no corrs),
31.74 (corrs), 11.44 (no corrs),
30.94 (corrs), 11.09 (no corrs),
27.73 (corrs), 9.47 (no corrs),
19.42 (corrs), 6.35 (no corrs),
18.61 (corrs), 5.84 (no corrs),
18.72 (corrs), **5.62** (no corrs),
23.06 (corrs), 6.78 (no corrs),
30.78 (corrs), 9.16 (no corrs),
37.61 (corrs), 11.14 (no corrs),
44.12 (corrs), 13.62 (no corrs),
58.46 (corrs), 18.20 (no corrs),
140.27 (corrs), 45.48 (no corrs),
247.90 (corrs), 81.15 (no corrs),

$\chi^2 / 5$

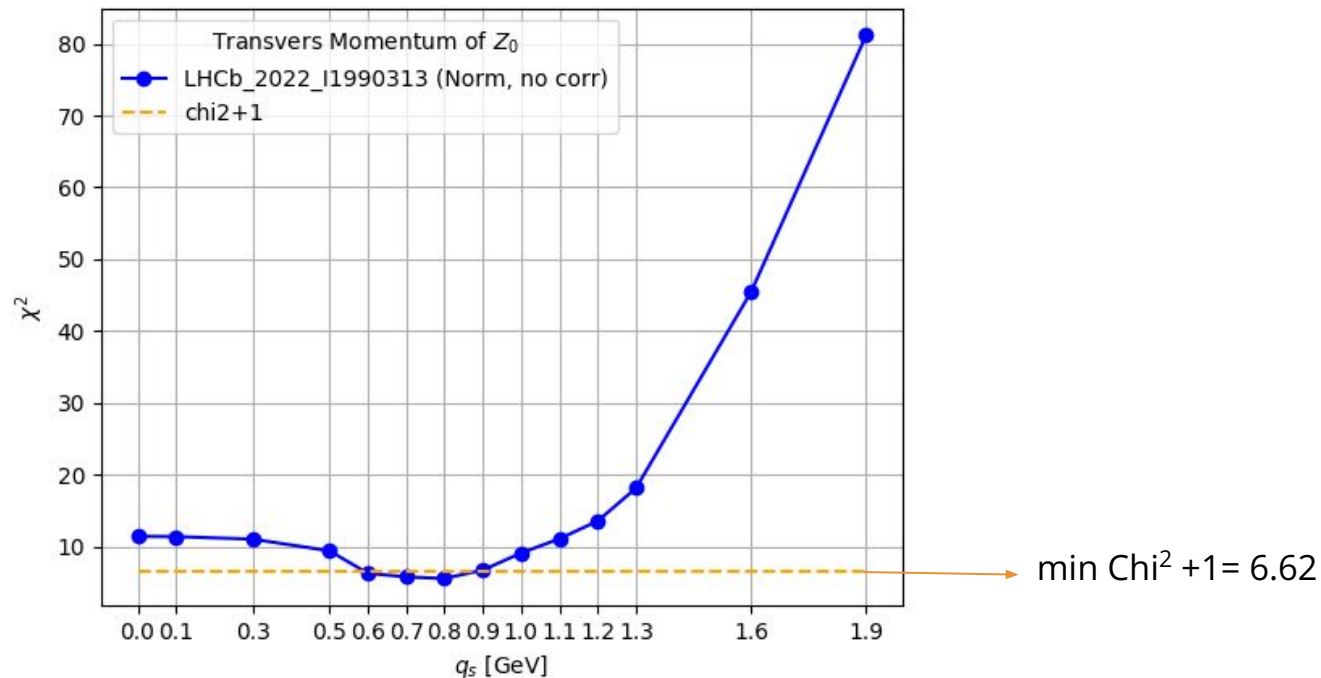


qs	0	0.1	0.3	0.5	0.6	0.7	0.8	0.9	1.0	1.1	1.2	1.3	1.6	1.9
$\chi^2 /$ ndf	2.2 98	2.2 88	2.2 18	1.8 94	1.2 7	1.1 68	1.1 24	1.3 56	1.8 32	2.2 28	2.7 24	3.6 4	9.0 96	16. 23

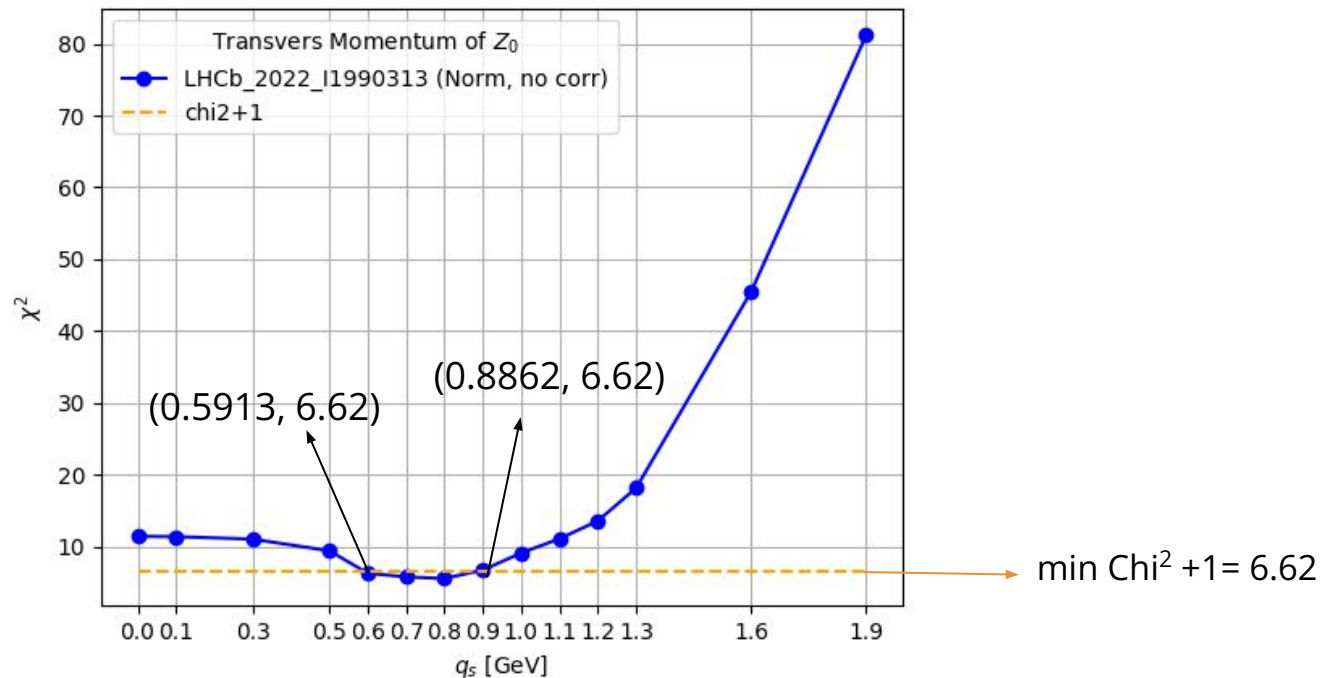
LHCb_2022_11990313- Transverse Momentum of Z



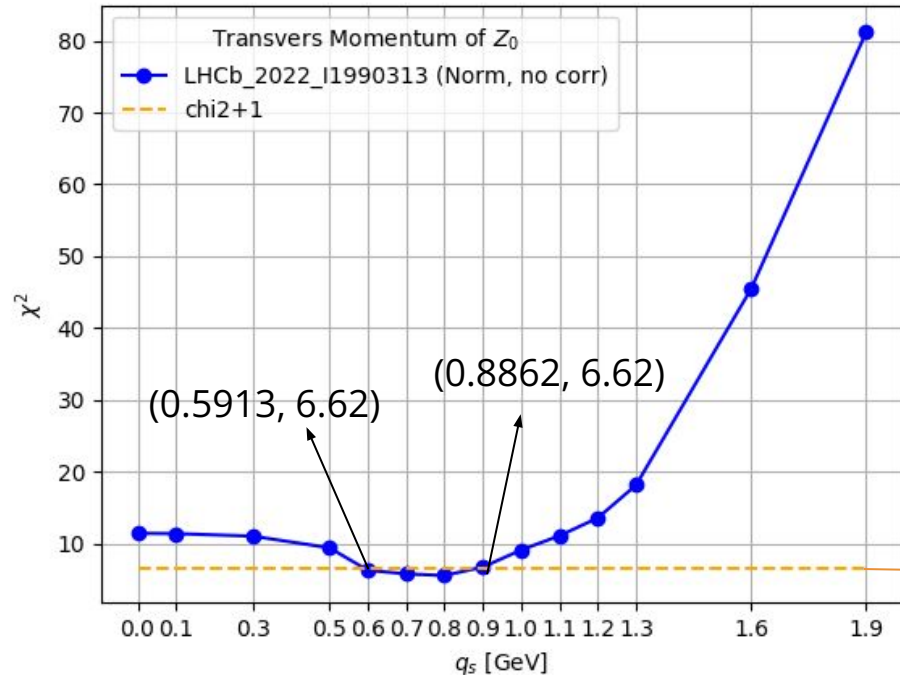
LHCb_2022_11990313- Uncertainty on q_s



LHCb_2022_11990313- Uncertainty on q_s



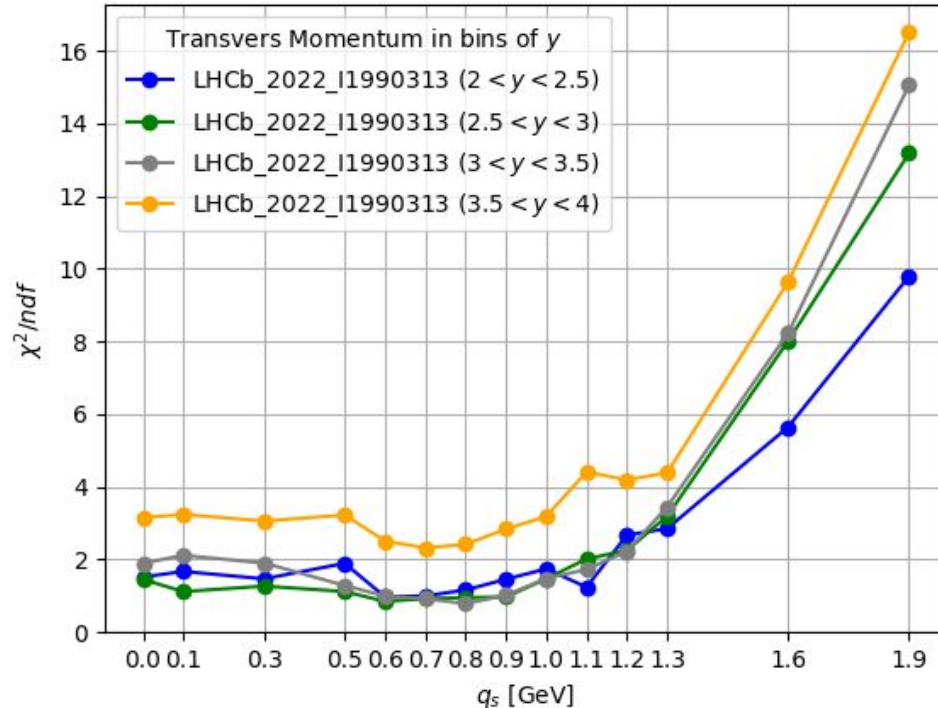
LHCb_2022_11990313- Uncertainty on q_s



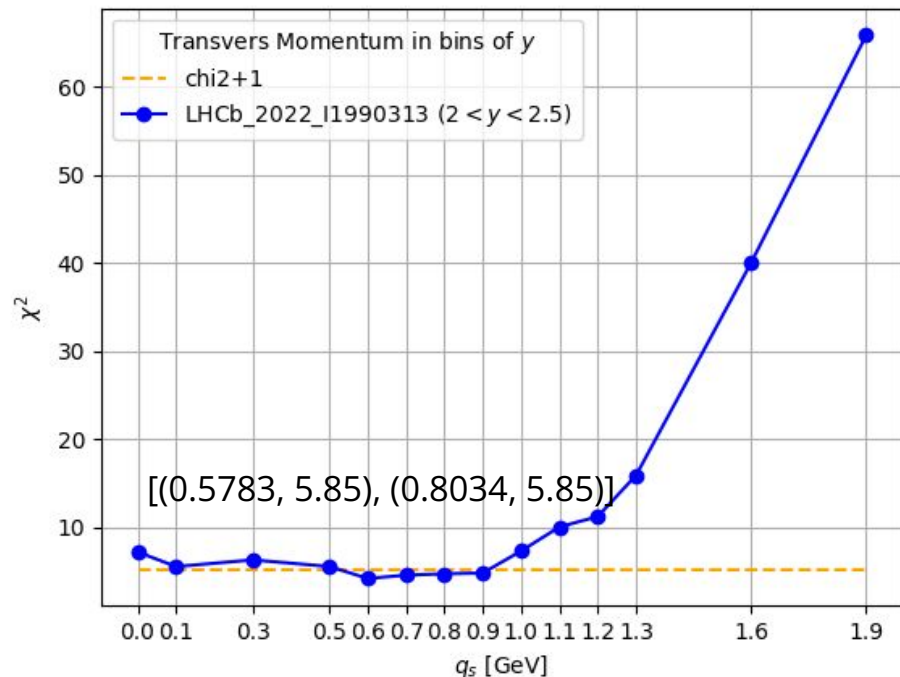
$$\text{Unc} = (0.8862 - 0.5913) / 2 = 0.147$$

min $\chi^2 + 1 = 6.62$

LHCb_2022_I1990313 - Transverse momentum in bins of y



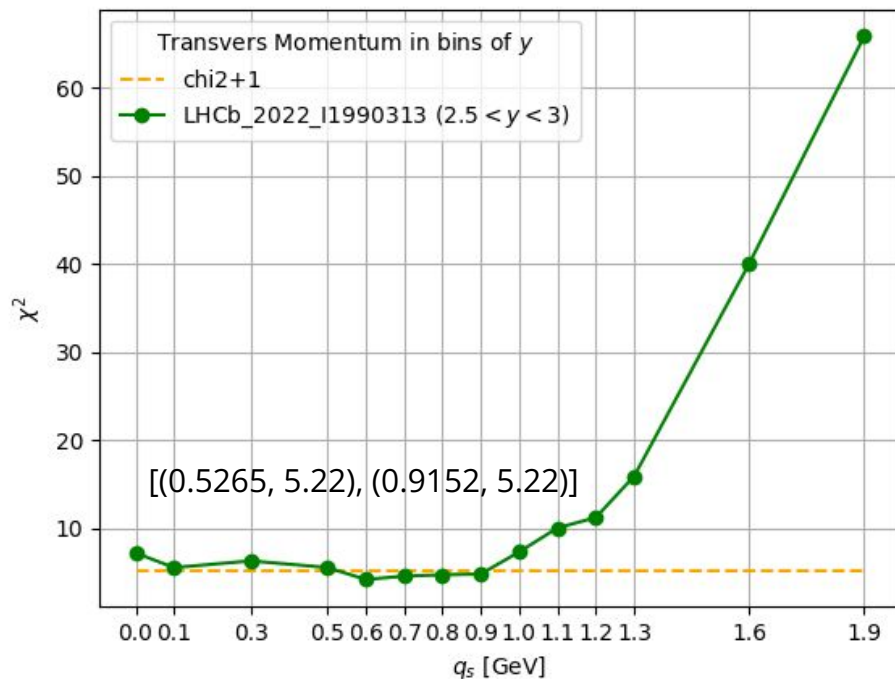
LHCb_2022_I1990313 - Transverse momentum in bins of y



7.59 (no corrs)
8.34 (no corrs)
7.33 (no corrs)
9.46 (no corrs)
4.85 (no corrs)
4.97 (no corrs)
5.80 (no corrs)
7.27 (no corrs)
8.70 (no corrs)
6.18 (no corrs)
13.34 (no corrs)
14.24 (no corrs)
28.21 (no corrs)
48.95 (no corrs)

Chi2 min for $q_s = 0.6$

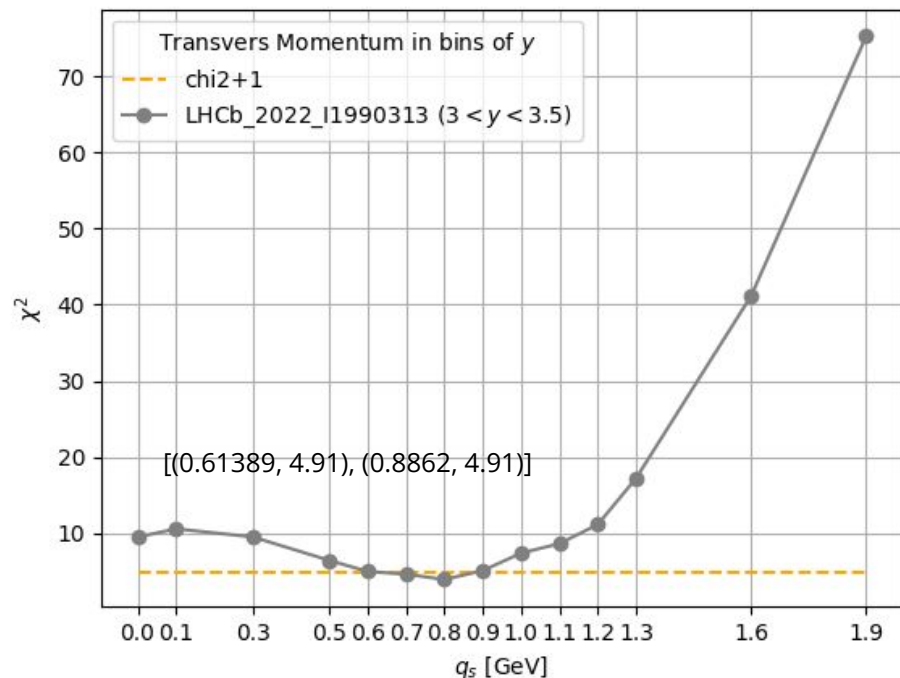
LHCb_2022_l1990313 - Transverse momentum in bins of y



7.23 (no corrs)
5.57 (no corrs)
6.33 (no corrs)
5.58 (no corrs)
4.22 (no corrs)
4.60 (no corrs)
4.75 (no corrs)
4.84 (no corrs)
7.34 (no corrs)
10.07 (no corrs)
11.25 (no corrs)
15.94 (no corrs)
40.06 (no corrs)
65.88 (no corrs)

Chi2 min for $q_s = 0.6$

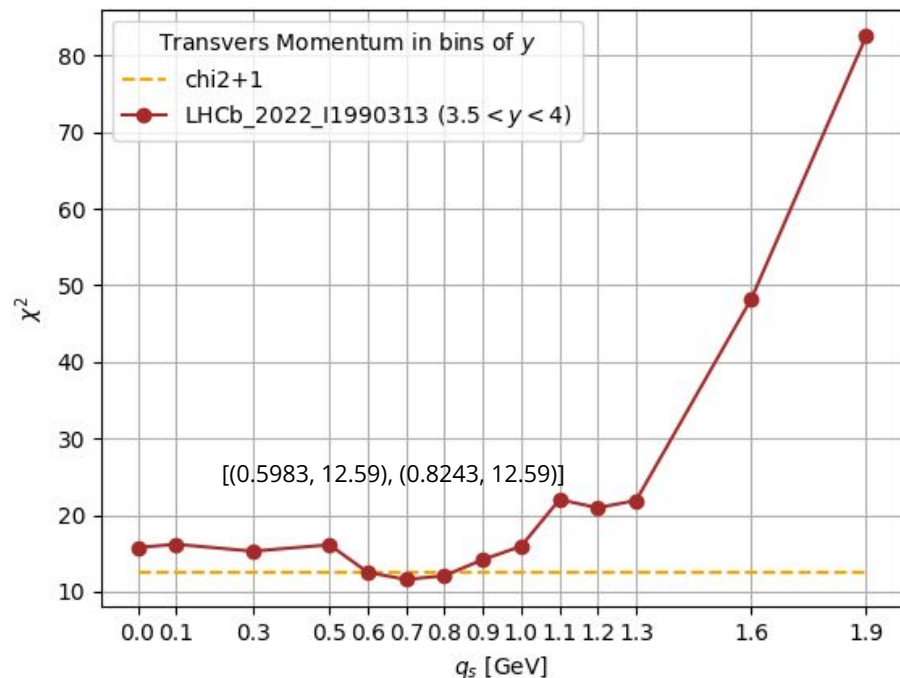
LHCb_2022_I1990313 - Transverse momentum in bins of y



9.48 (no corrs)
10.56 (no corrs)
9.50 (no corrs)
6.41 (no corrs)
4.96 (no corrs)
4.60 (no corrs)
3.91 (no corrs)
5.07 (no corrs)
7.37 (no corrs)
8.62 (no corrs)
11.13 (no corrs)
17.21 (no corrs)
75.25 (no corrs)

Chi2 min for $q_s = 0.8$

LHCb_2022_I1990313 - Transverse momentum in bins of y



15.76 (no corrs)
16.19 (no corrs)
15.28 (no corrs)
16.12 (no corrs)
12.53 (no corrs)
11.59 (no corrs)
12.08 (no corrs)
14.18 (no corrs)
15.92 (no corrs)
22.02 (no corrs)
20.95 (no corrs)
21.91 (no corrs)
48.18 (no corrs)
82.51 (no corrs)

Chi2 min for $q_s = 0.7$