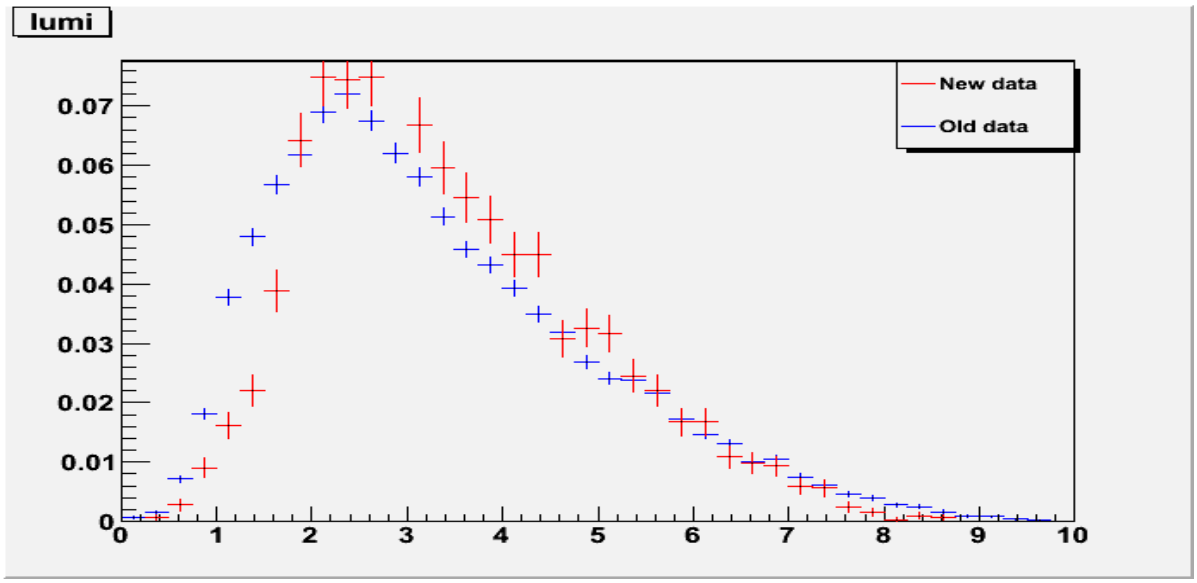
Contents

1 Comparison new vs old data **3**

Chapter 1

Comparison new vs old data



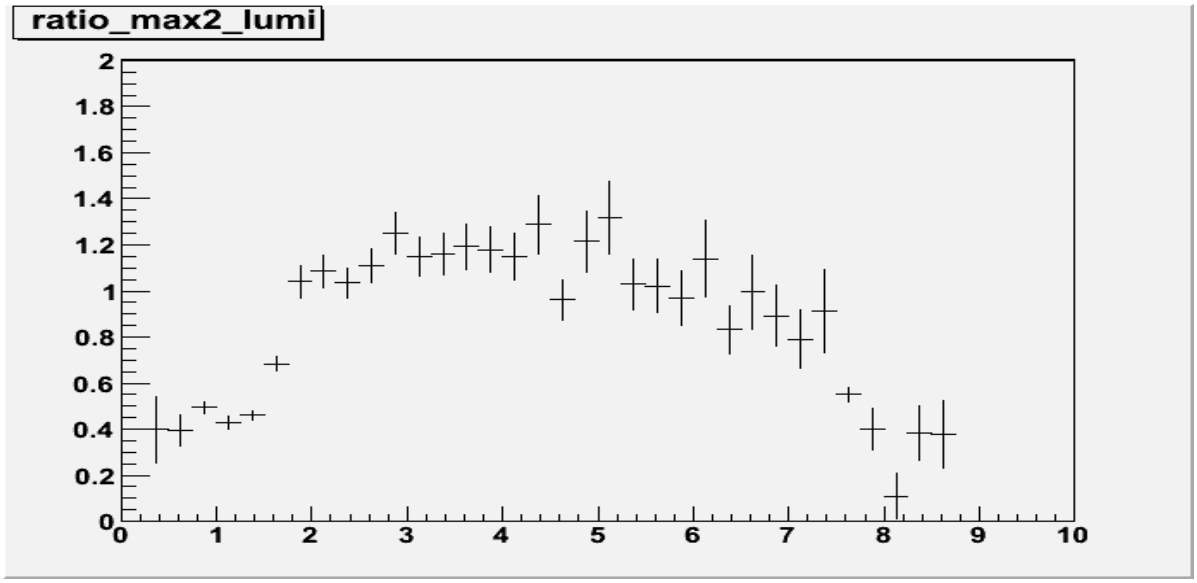
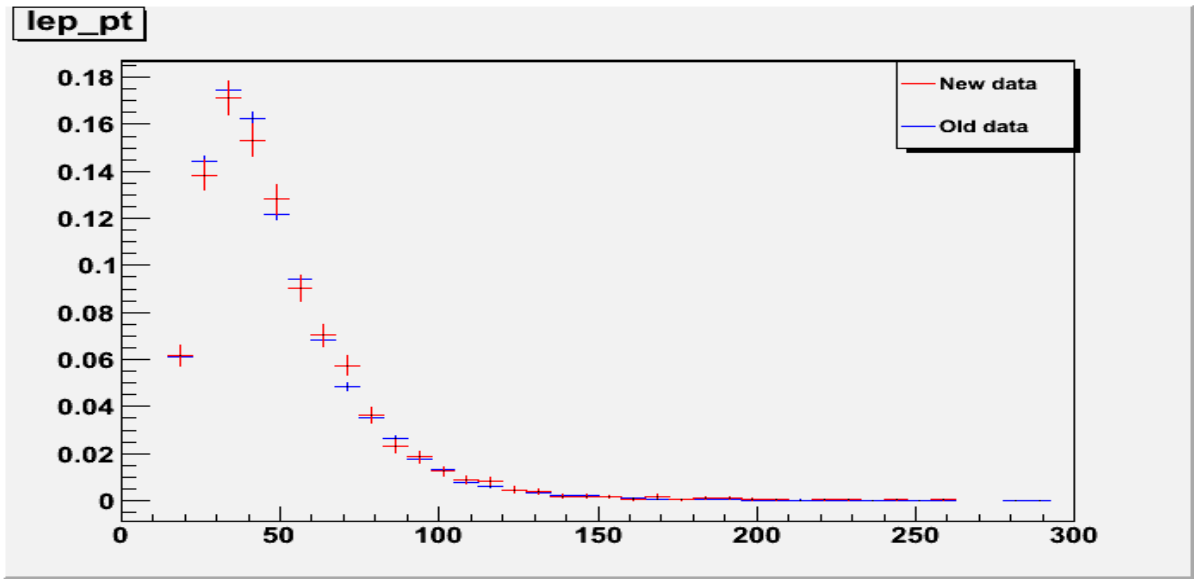


Figure 1.1:


lep_pt
New data
Old data
0.18
0.16
0.14
0.12
0.1
0.08
0.06
0.04
0.02
0
0
50
100
150
200
250
300

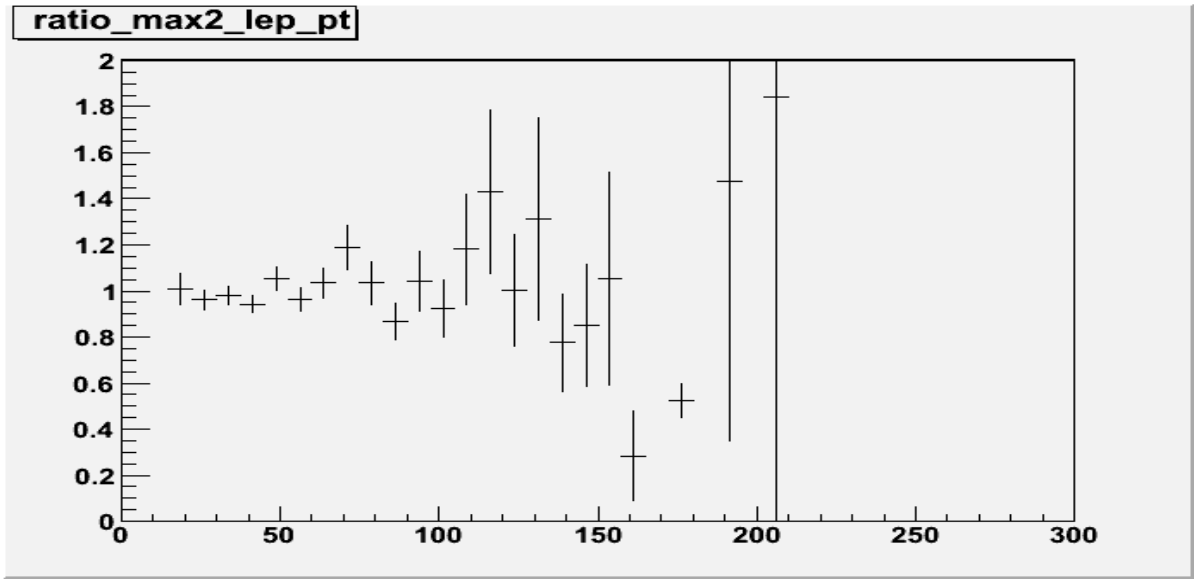
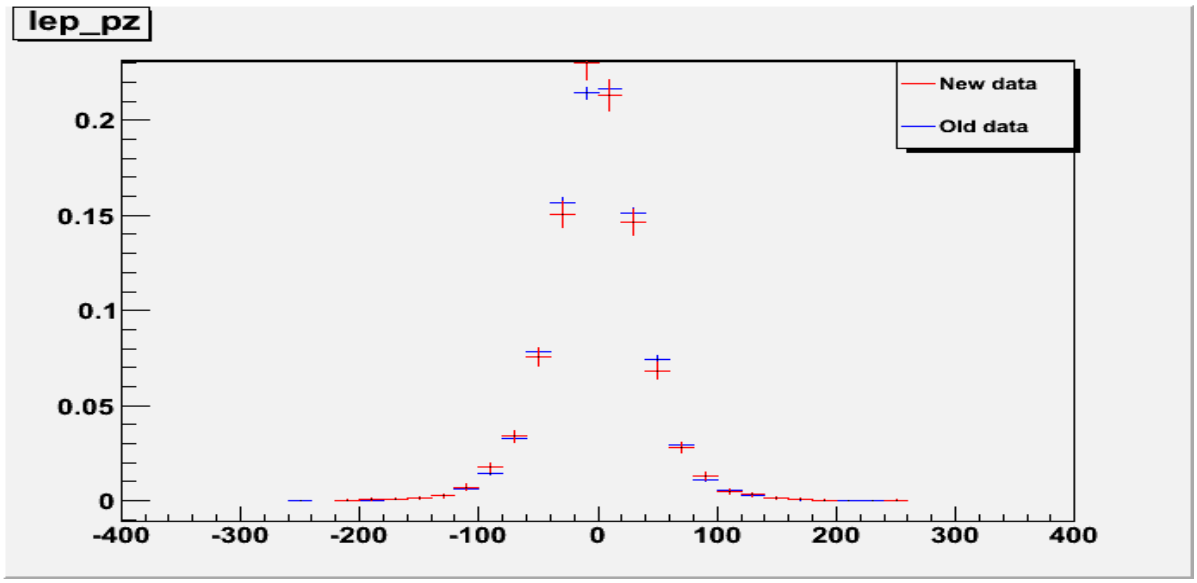

ratio_max2_lep_pt
2
1.8
1.6
1.4
1.2
1
0.8
0.6
0.4
0.2
0
0
50
100
150
200
250
300

Figure 1.2:


lep_pz
New data
Old data
0.2
0.15
0.1
0.05
0
-400
-300
-200
-100
0
100
200
300
400

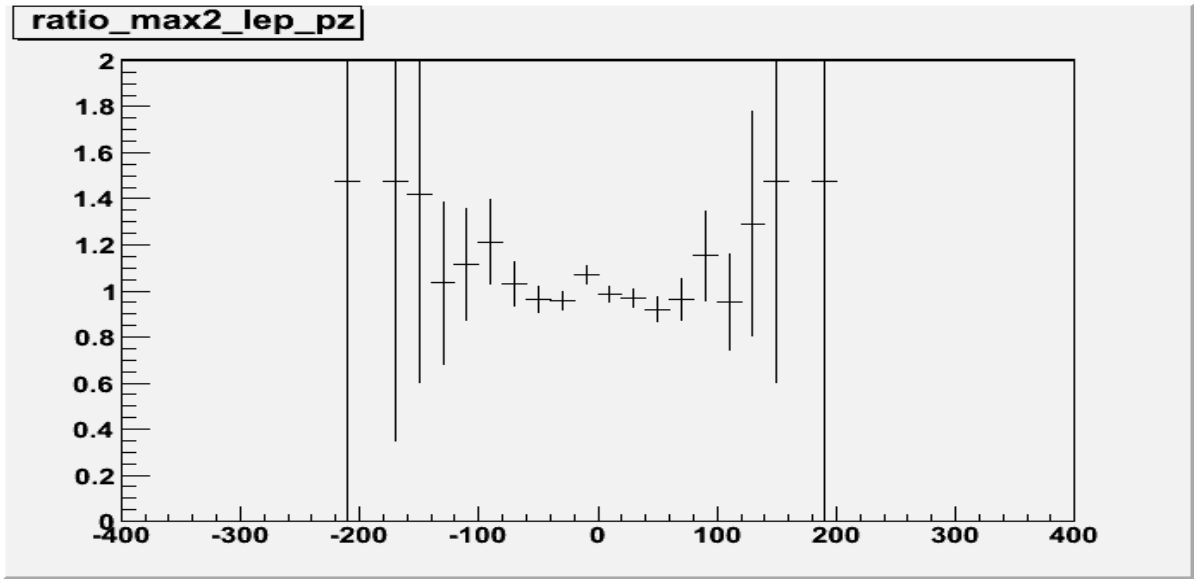
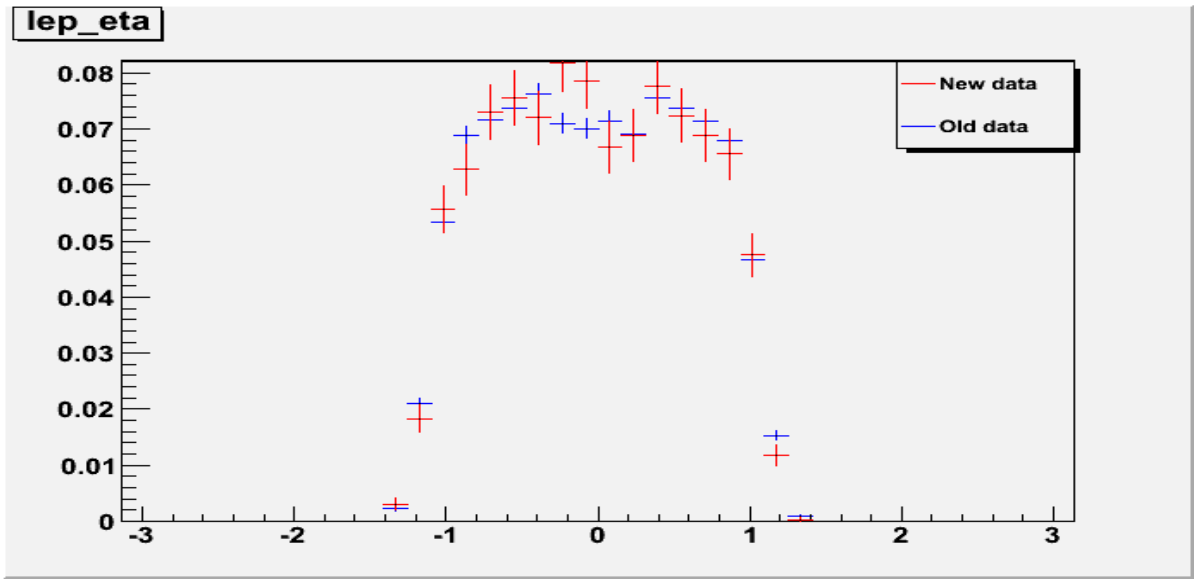

ratio_max2_lep_pz
2
1.8
1.6
1.4
1.2
1
0.8
0.6
0.4
0.2
0
-400
-300
-200
-100
0
100
200
300
400

Figure 1.3:


lep_eta
New data
Old data
0.08
0.07
0.06
0.05
0.04
0.03
0.02
0.01
0
-3
-2
-1
0
1
2
3

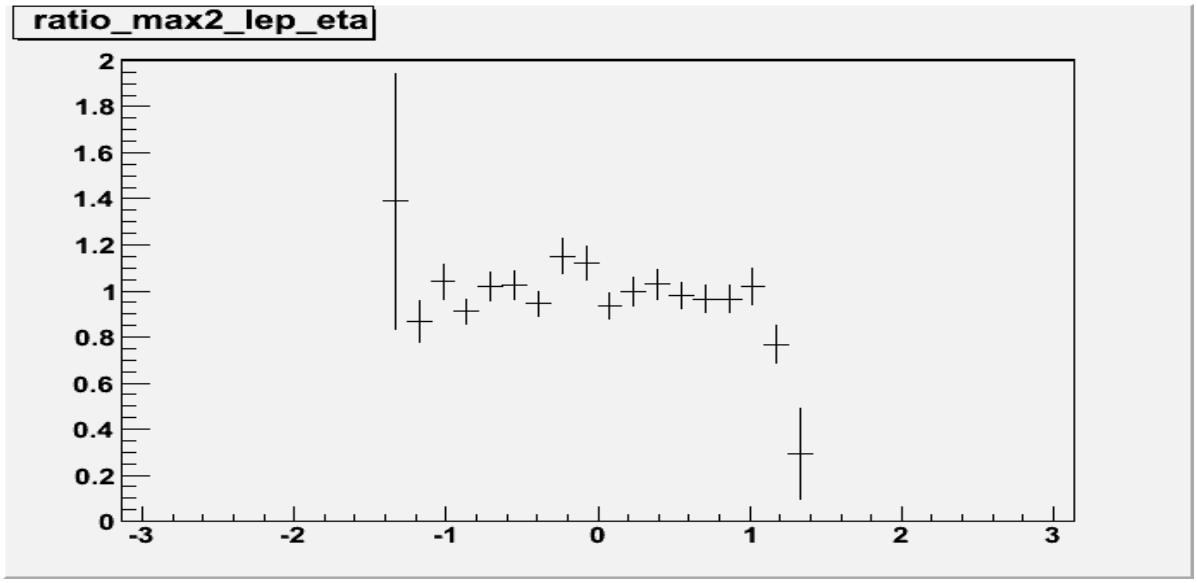
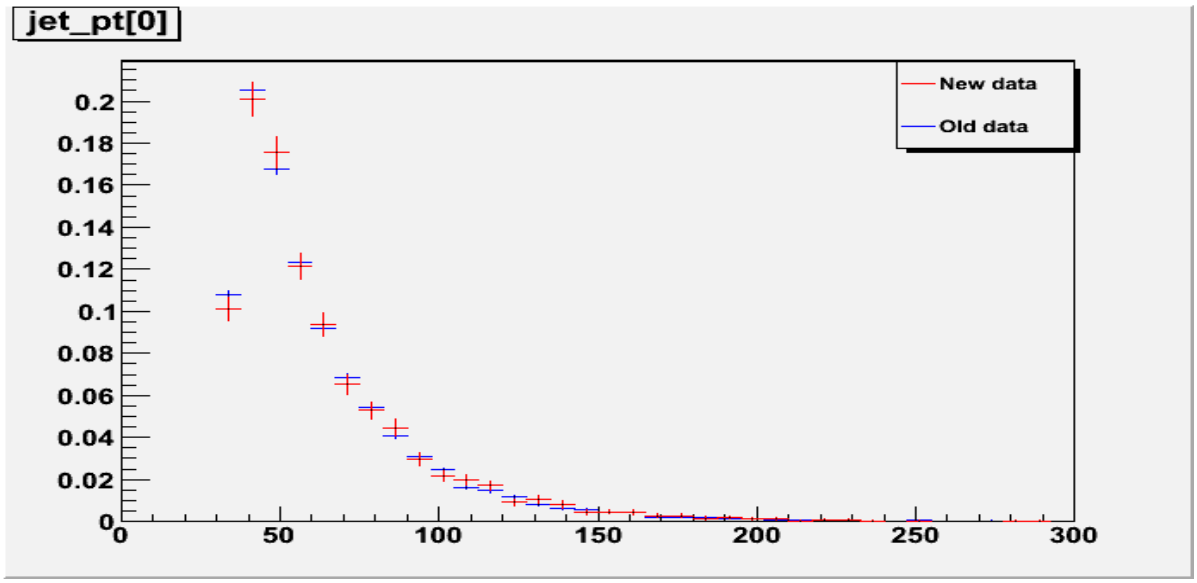

ratio_max2_lep_eta
2
1.8
1.6
1.4
1.2
1
0.8
0.6
0.4
0.2
0
-3
-2
-1
0
1
2
3

Figure 1.4:


jet_pt[0]
New data
Old data
0.2
0.18
0.16
0.14
0.12
0.1
0.08
0.06
0.04
0.02
0
0
50
100
150
200
250
300

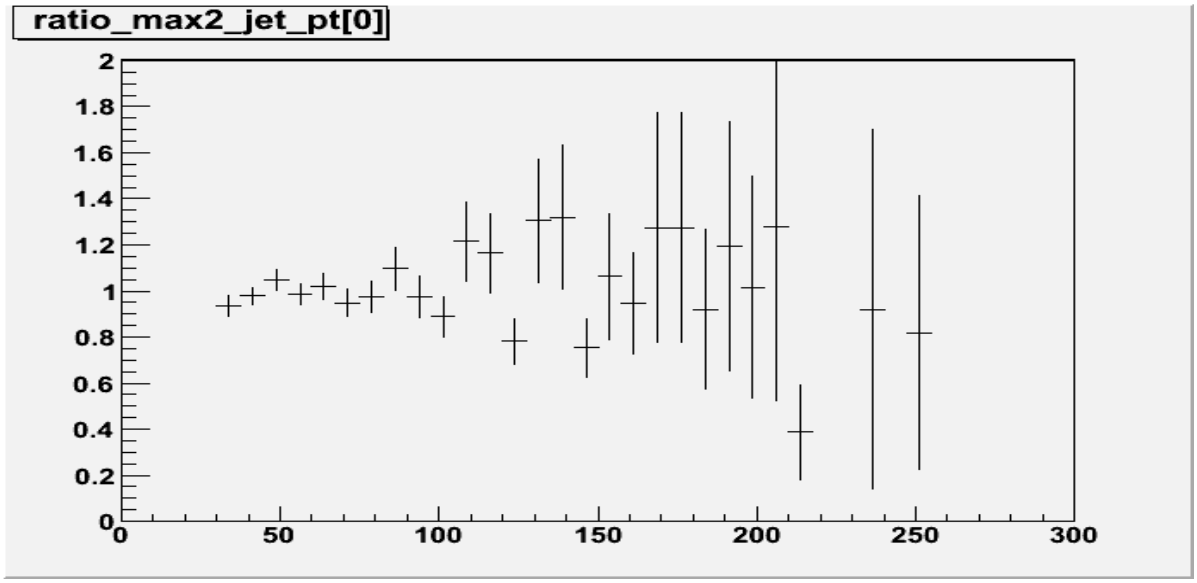
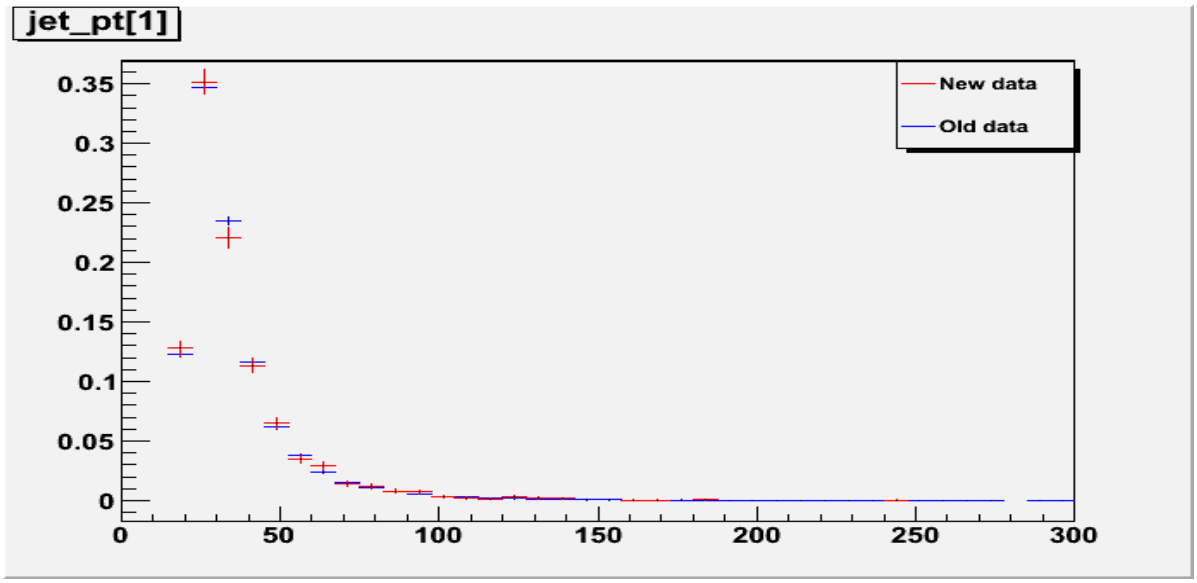

ratio_max2_jet_pt[0]
2
1.8
1.6
1.4
1.2
1
0.8
0.6
0.4
0.2
0
0
50
100
150
200
250
300

Figure 1.5:


jet_pt[1]
New data
Old data
0.35
0.3
0.25
0.2
0.15
0.1
0.05
0
0
50
100
150
200
250
300

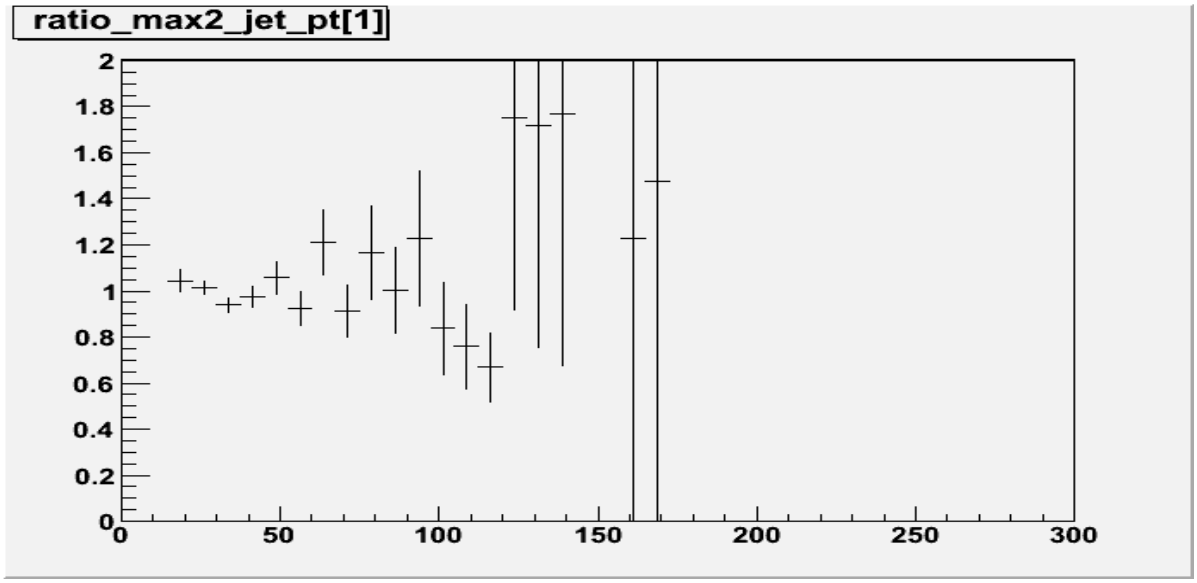
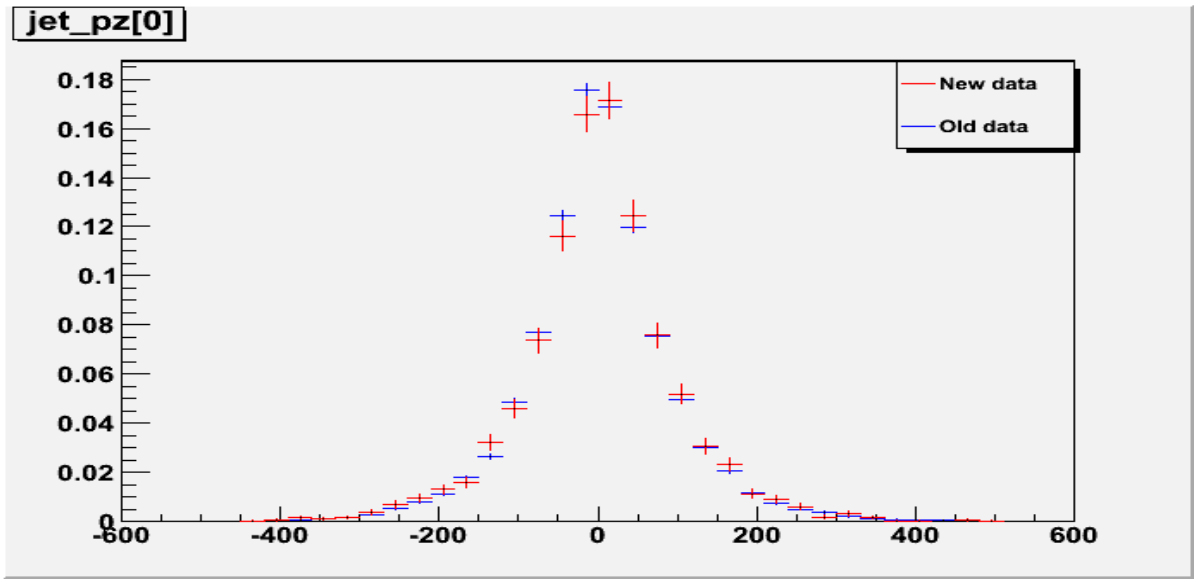

ratio_max2_jet_pt[1]
2
1.8
1.6
1.4
1.2
1
0.8
0.6
0.4
0.2
0
0
50
100
150
200
250
300

Figure 1.6:


jet_pz[0]
New data
Old data
0.18
0.16
0.14
0.12
0.1
0.08
0.06
0.04
0.02
0
-600
-400
-200
0
200
400
600

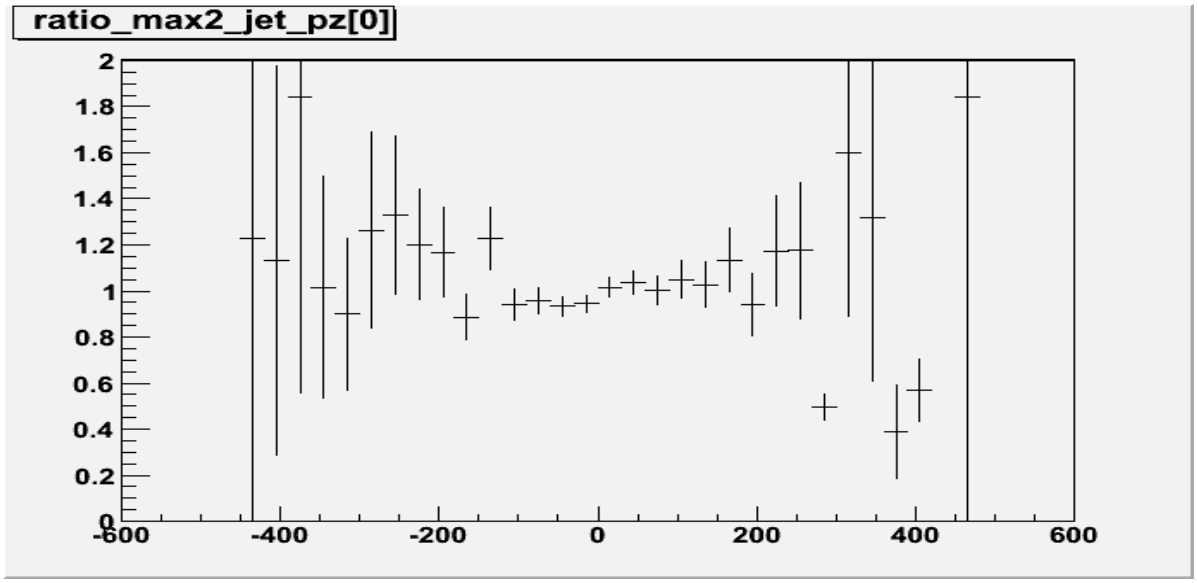
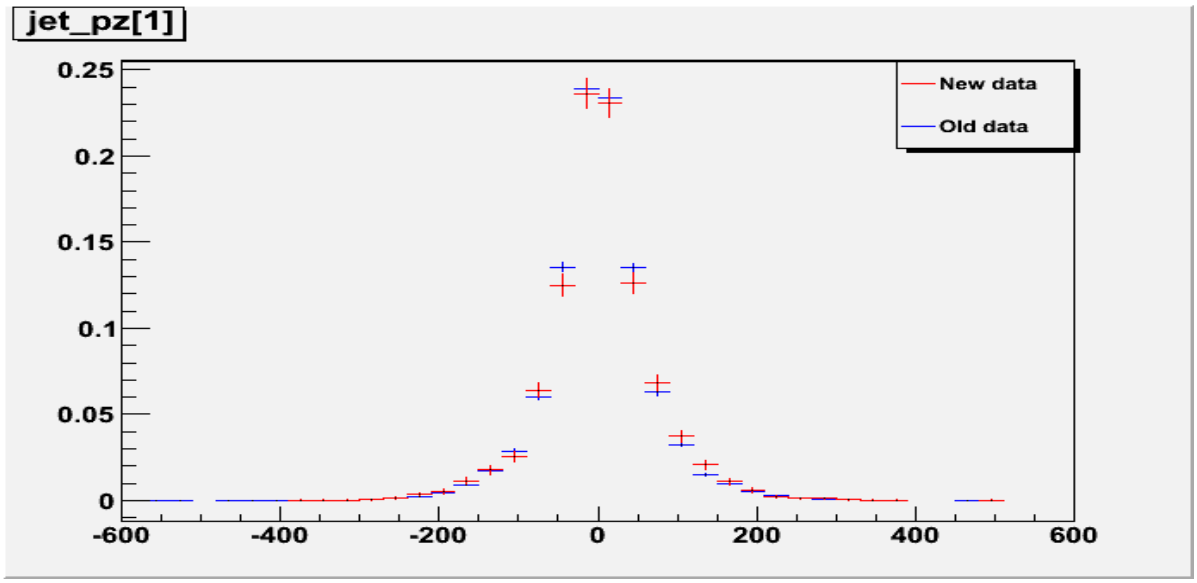

ratio_max2_jet_pz[0]
2
1.8
1.6
1.4
1.2
1
0.8
0.6
0.4
0.2
0
-600
-400
-200
0
200
400
600

Figure 1.7:


jet_pz[1]
New data
Old data
0.25
0.2
0.15
0.1
0.05
0
-600
-400
-200
0
200
400
600

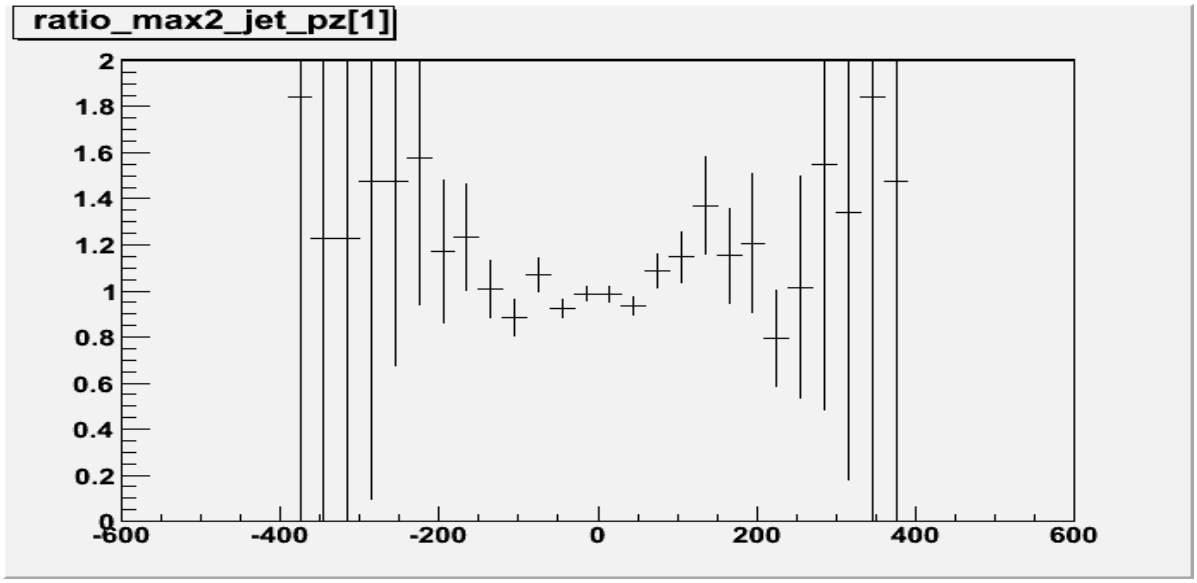
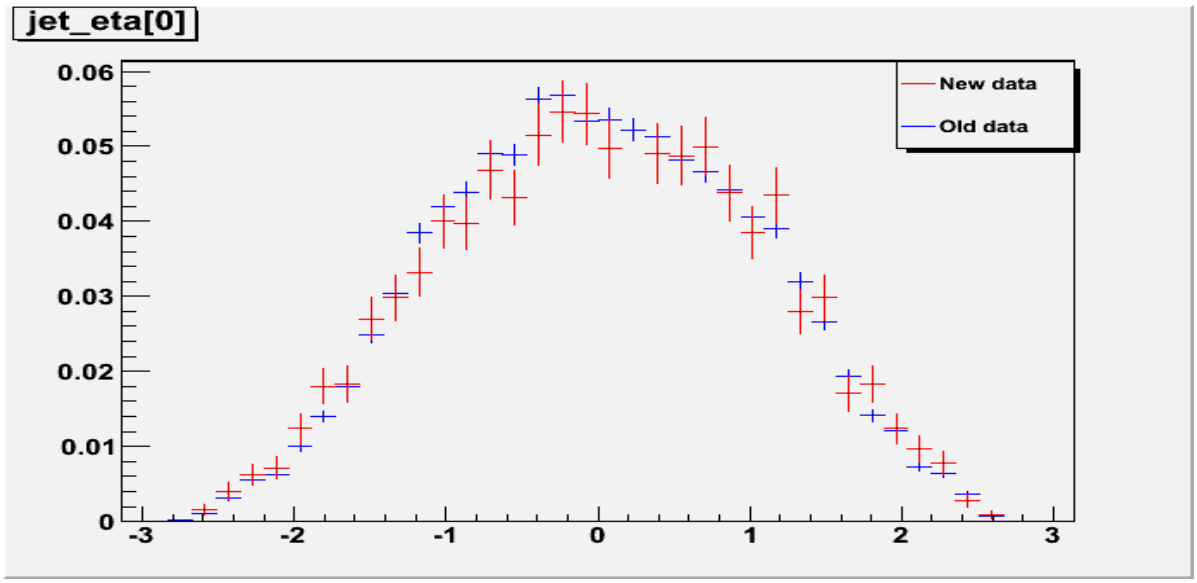

ratio_max2_jet_pz[1]
2
1.8
1.6
1.4
1.2
1
0.8
0.6
0.4
0.2
0
-600
-400
-200
0
200
400
600

Figure 1.8:


jet_eta[0]
New data
Old data
0.06
0.05
0.04
0.03
0.02
0.01
0
-3
-2
-1
0
1
2
3

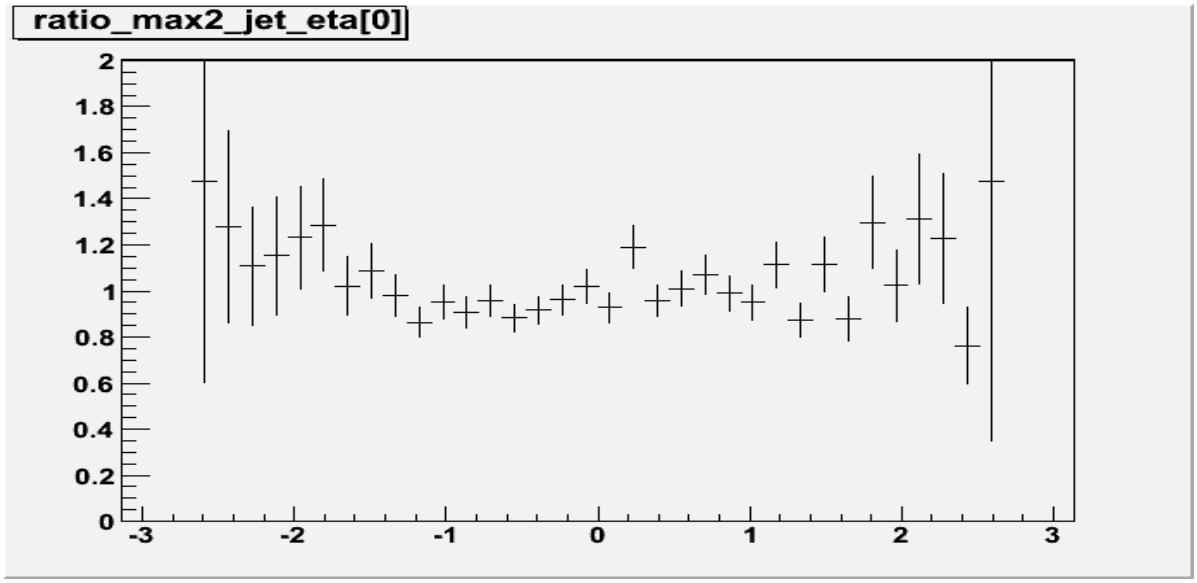
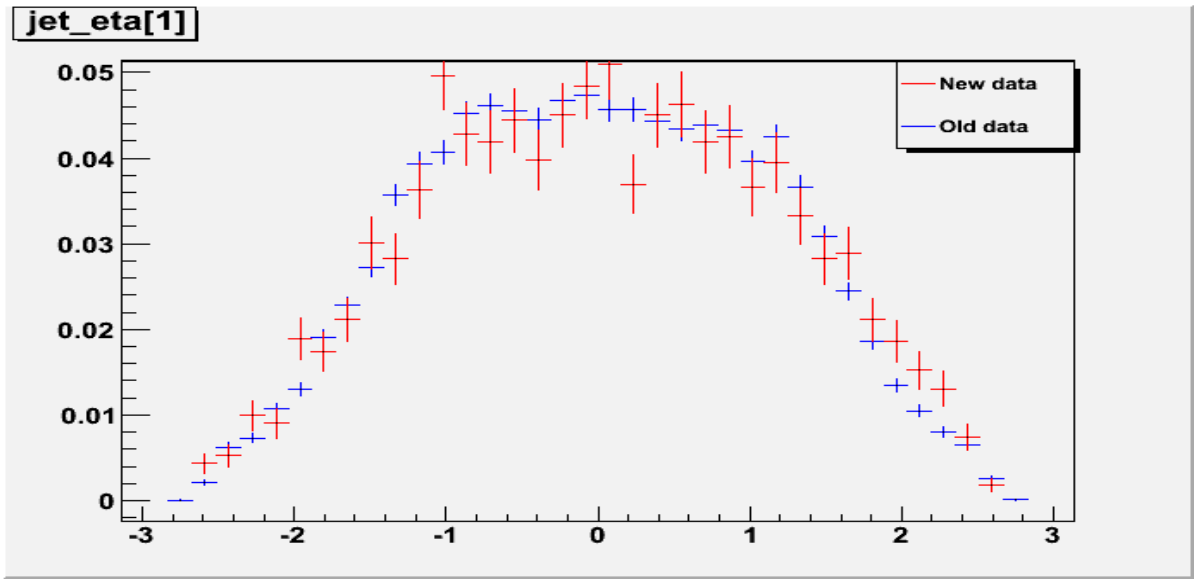

ratio_max2_jet_eta[0]
2
1.8
1.6
1.4
1.2
1
0.8
0.6
0.4
0.2
0
-3
-2
-1
0
1
2
3

Figure 1.9:


jet_eta[1]
New data
Old data
0.05
0.04
0.03
0.02
0.01
0
-3
-2
-1
0
1
2
3

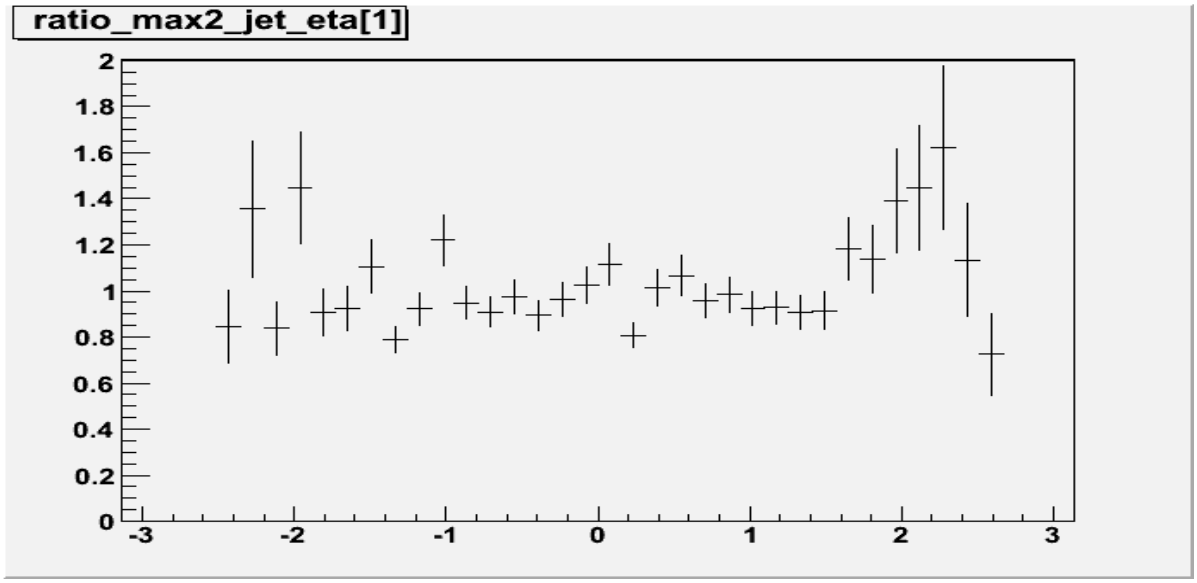
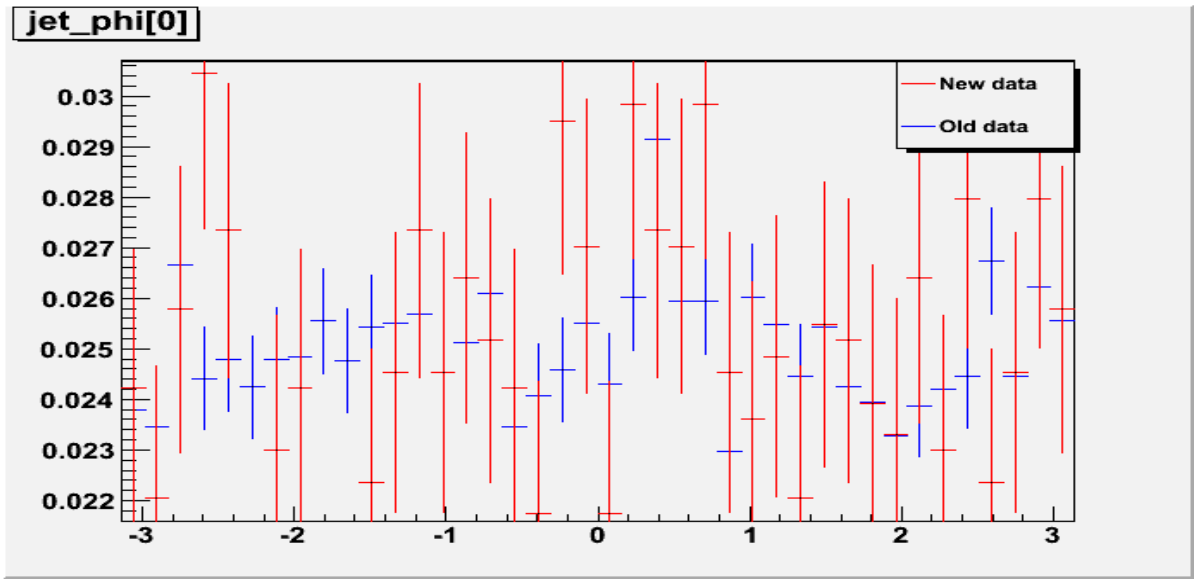

ratio_max2_jet_eta[1]
2
1.8
1.6
1.4
1.2
1
0.8
0.6
0.4
0.2
0
-3
-2
-1
0
1
2
3

Figure 1.10:


jet_phi[0]
New data
Old data
0.03
0.029
0.028
0.027
0.026
0.025
0.024
0.023
0.022
-3
-2
-1
0
1
2
3

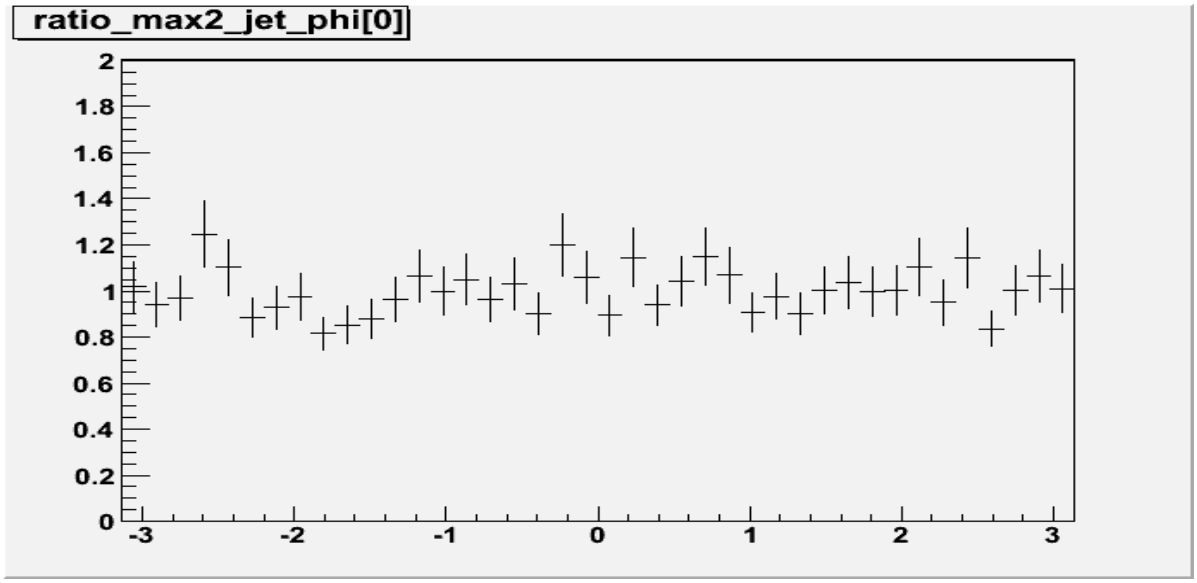
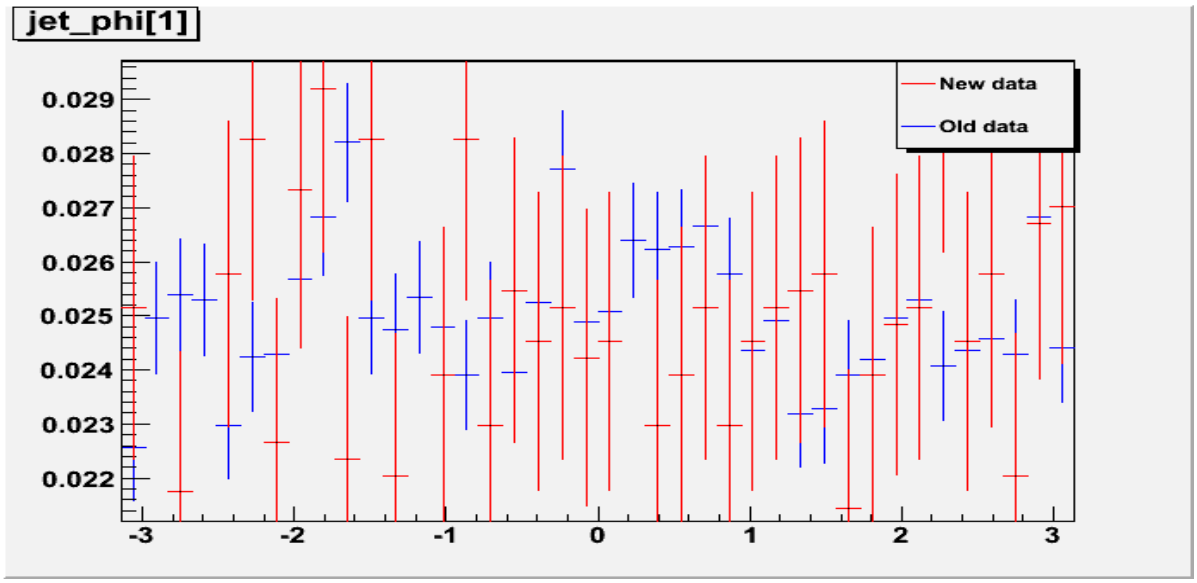

ratio_max2_jet_phi[0]
2
1.8
1.6
1.4
1.2
1
0.8
0.6
0.4
0.2
0
-3
-2
-1
0
1
2
3

Figure 1.11:


jet_phi[1]
New data
Old data
0.029
0.028
0.027
0.026
0.025
0.024
0.023
0.022
-3
-2
-1
0
1
2
3

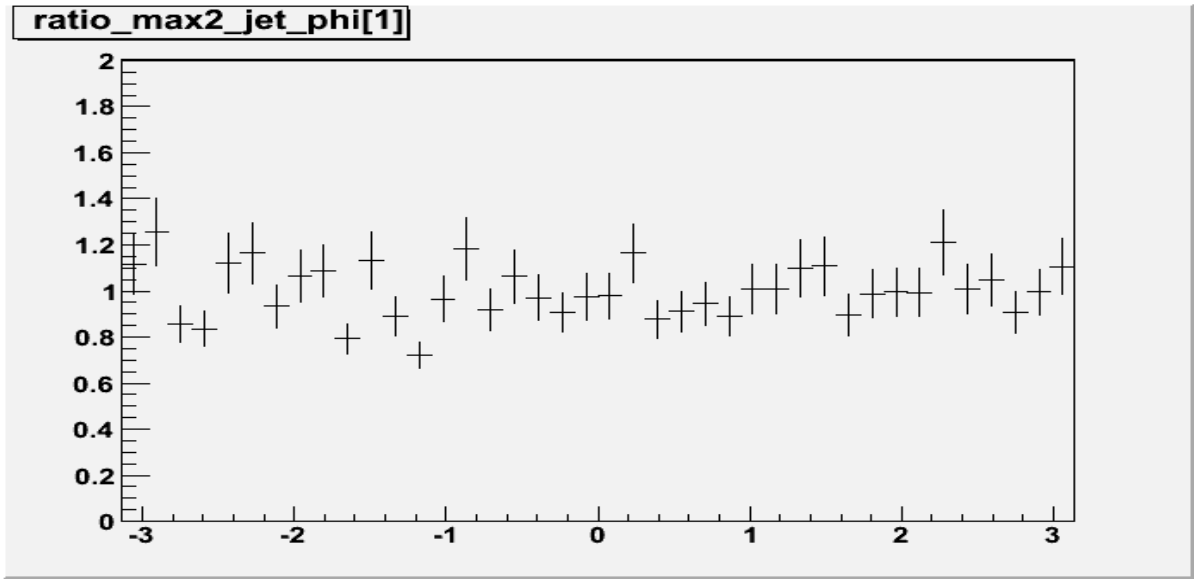
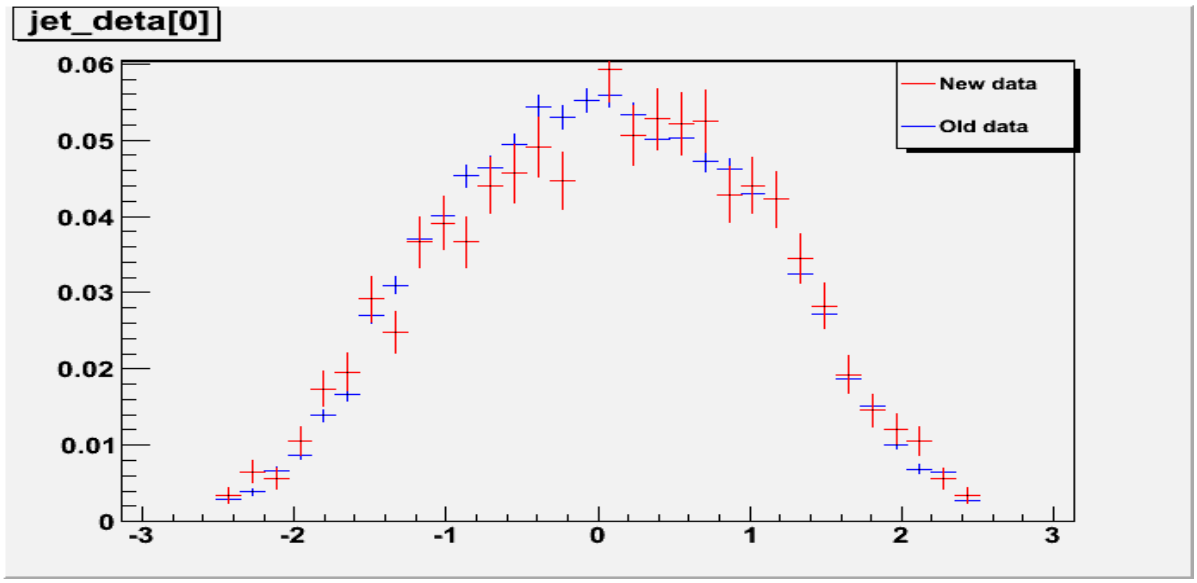

ratio_max2_jet_phi[1]
2
1.8
1.6
1.4
1.2
1
0.8
0.6
0.4
0.2
0
-3
-2
-1
0
1
2
3

Figure 1.12:


jet_deta[0]
New data
Old data
0.06
0.05
0.04
0.03
0.02
0.01
0
-3
-2
-1
0
1
2
3

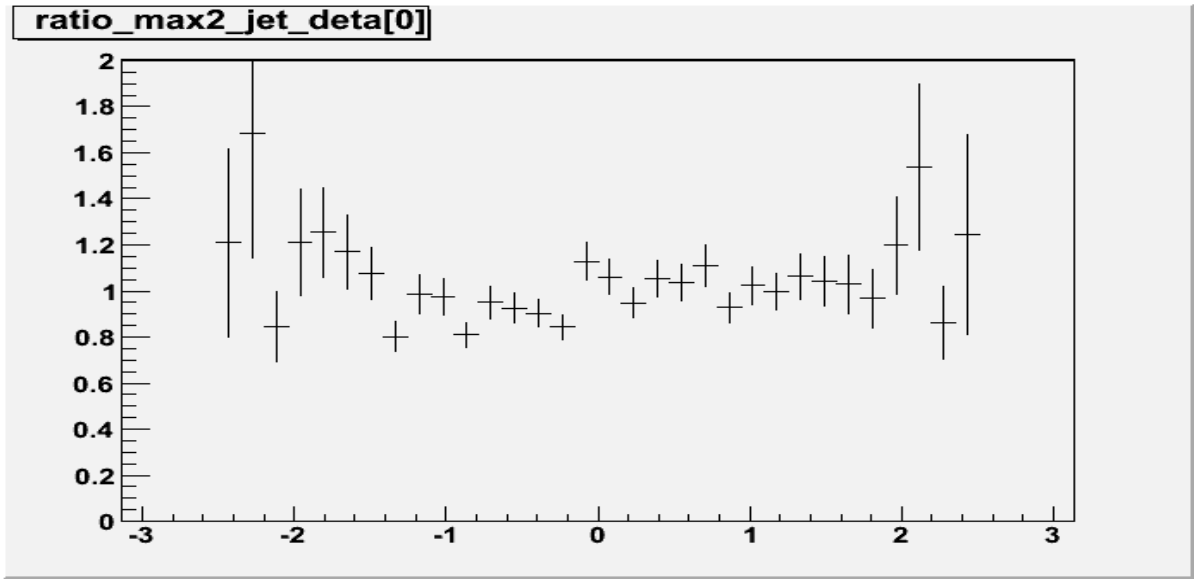
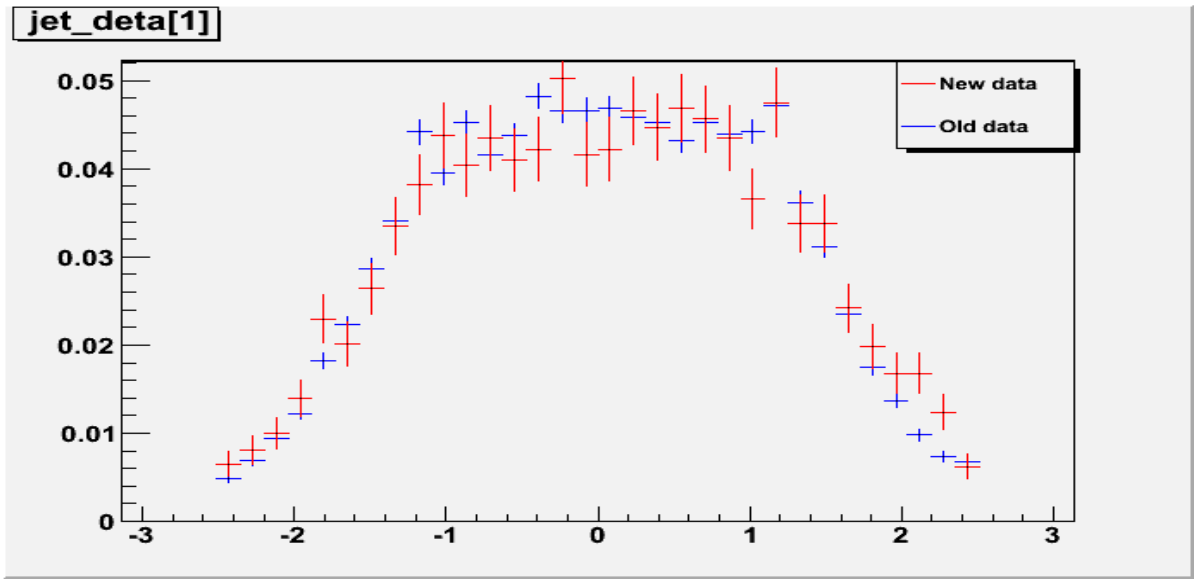

ratio_max2_jet_deta[0]
2
1.8
1.6
1.4
1.2
1
0.8
0.6
0.4
0.2
0
-3
-2
-1
0
1
2
3

Figure 1.13:


jet_deta[1]
New data
Old data
0.05
0.04
0.03
0.02
0.01
0
-3
-2
-1
0
1
2
3

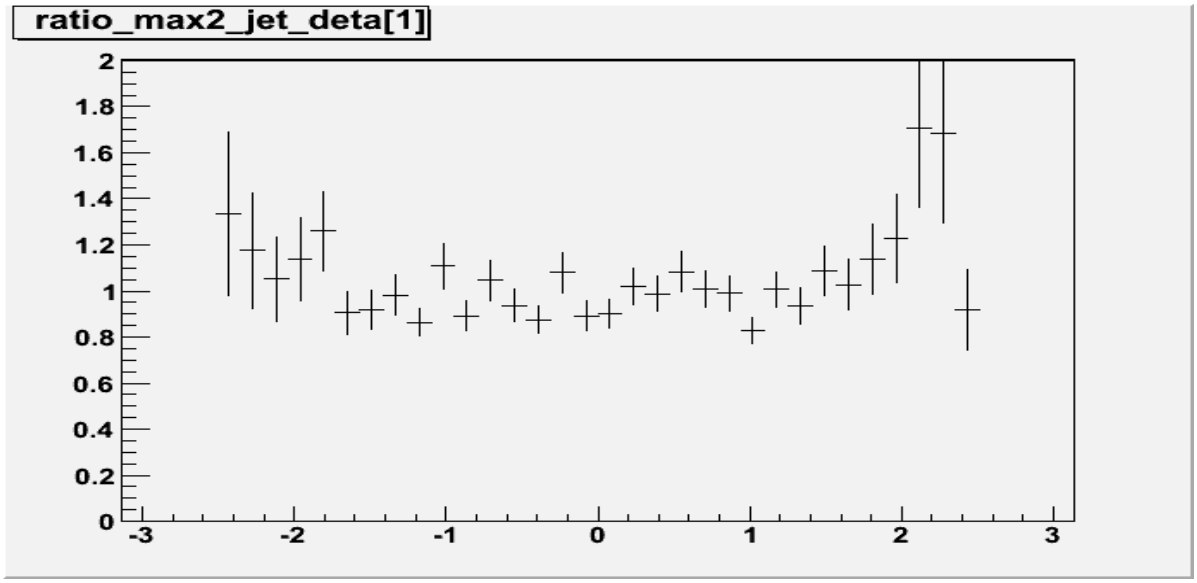
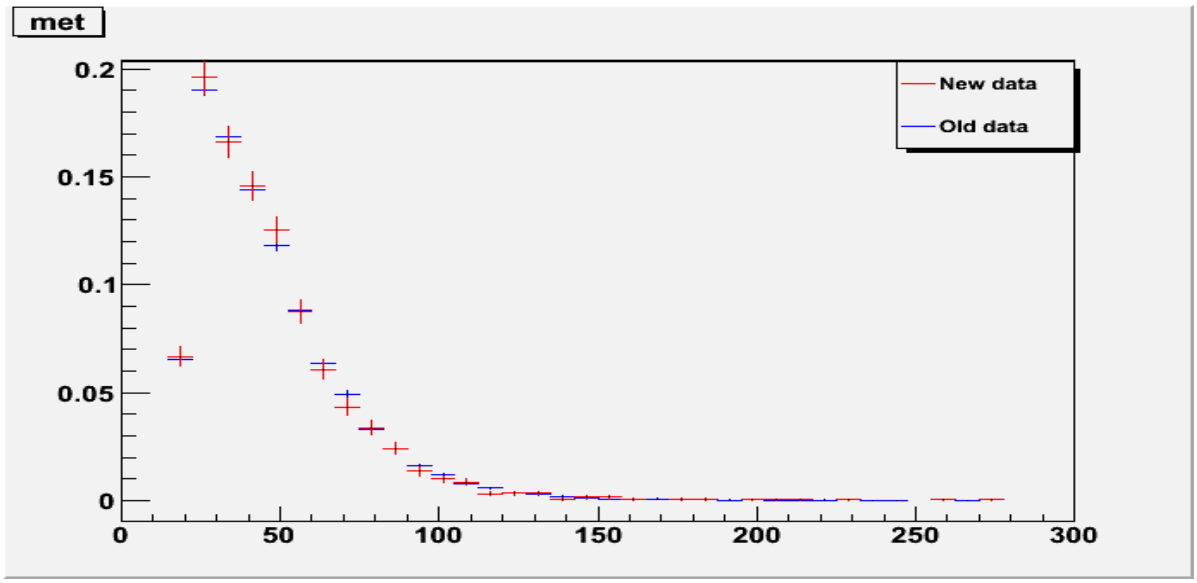

ratio_max2_jet_deta[1]
2
1.8
1.6
1.4
1.2
1
0.8
0.6
0.4
0.2
0
-3
-2
-1
0
1
2
3

Figure 1.14:


met
New data
Old data
0.2
0.15
0.1
0.05
0
0
50
100
150
200
250
300

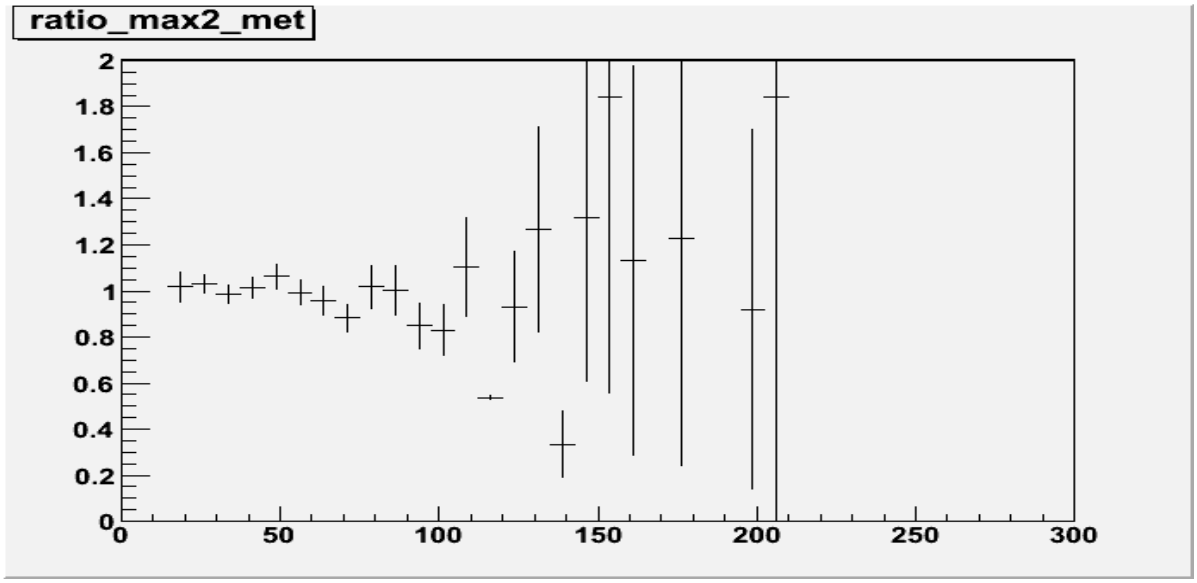
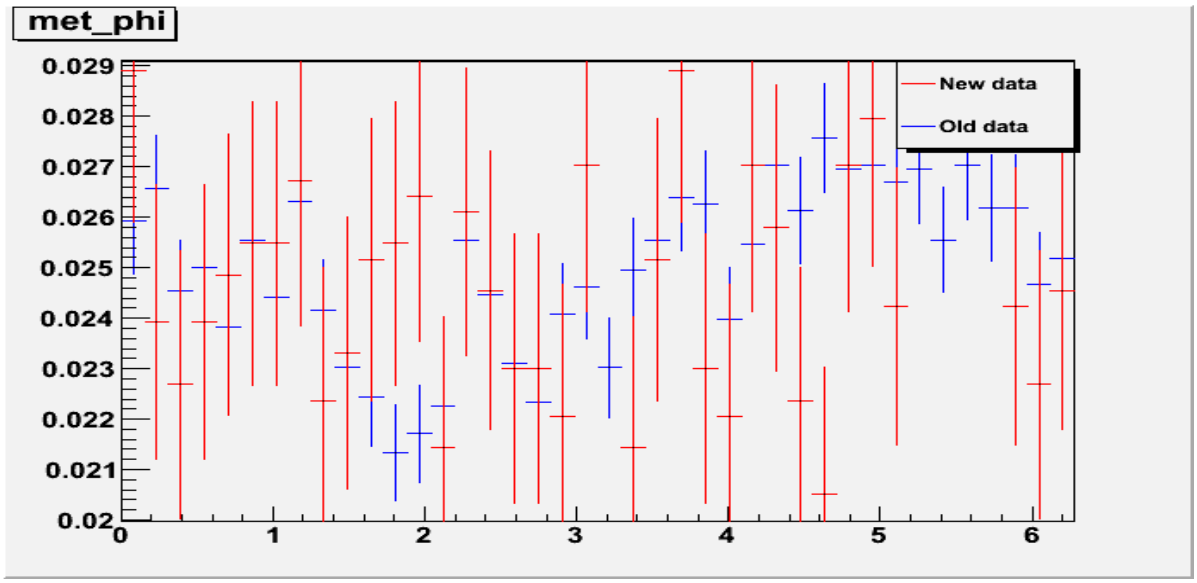

ratio_max2_met
2
1.8
1.6
1.4
1.2
1
0.8
0.6
0.4
0.2
0
0
50
100
150
200
250
300

Figure 1.15:


met_phi
New data
Old data
0.029
0.028
0.027
0.026
0.025
0.024
0.023
0.022
0.021
0.02
0
1
2
3
4
5
6

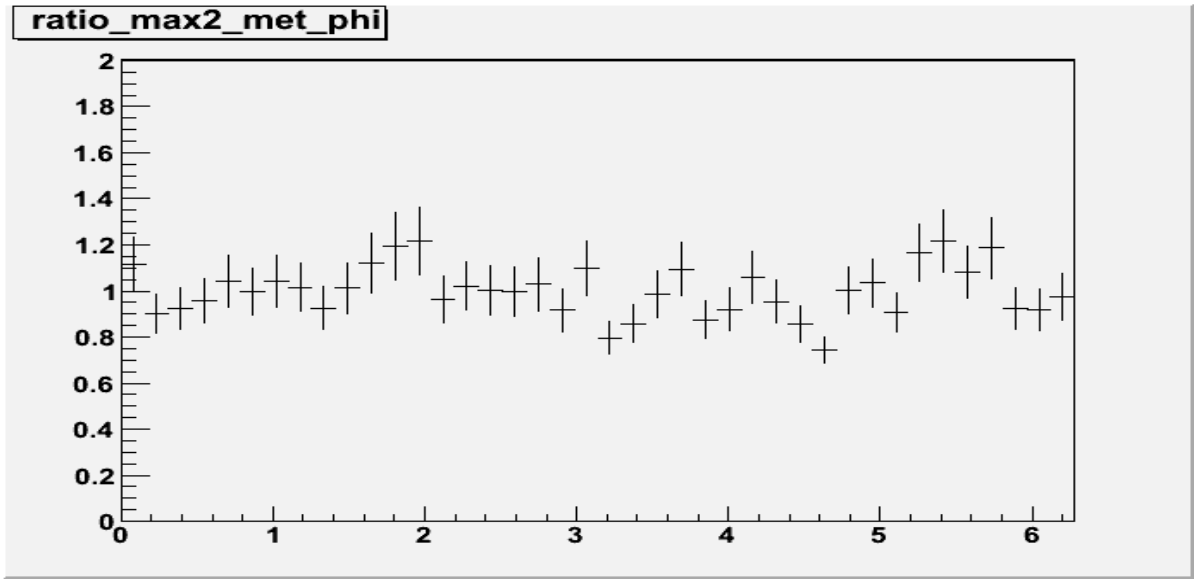
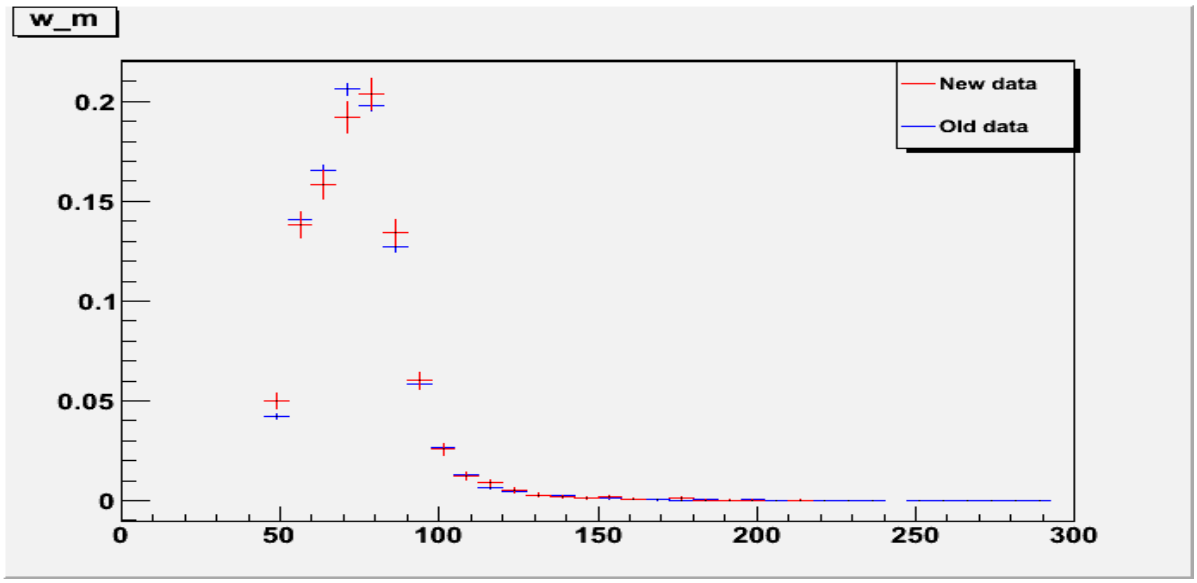

ratio_max2_met_phi
2
1.8
1.6
1.4
1.2
1
0.8
0.6
0.4
0.2
0
0
1
2
3
4
5
6

Figure 1.16:


w_m
New data
Old data
0.2
0.15
0.1
0.05
0
0
50
100
150
200
250
300

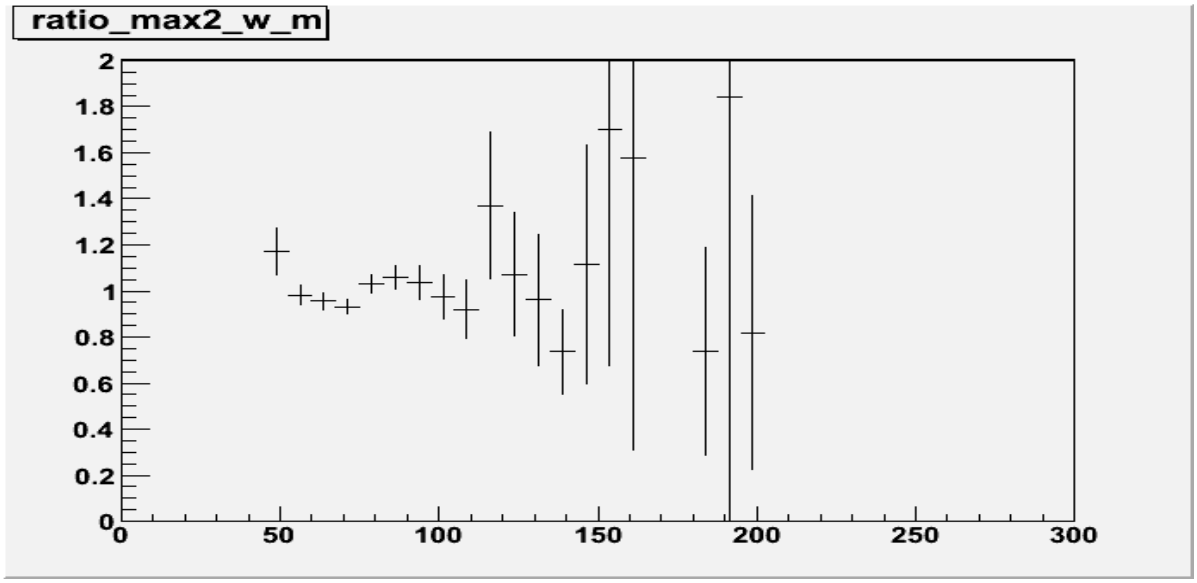
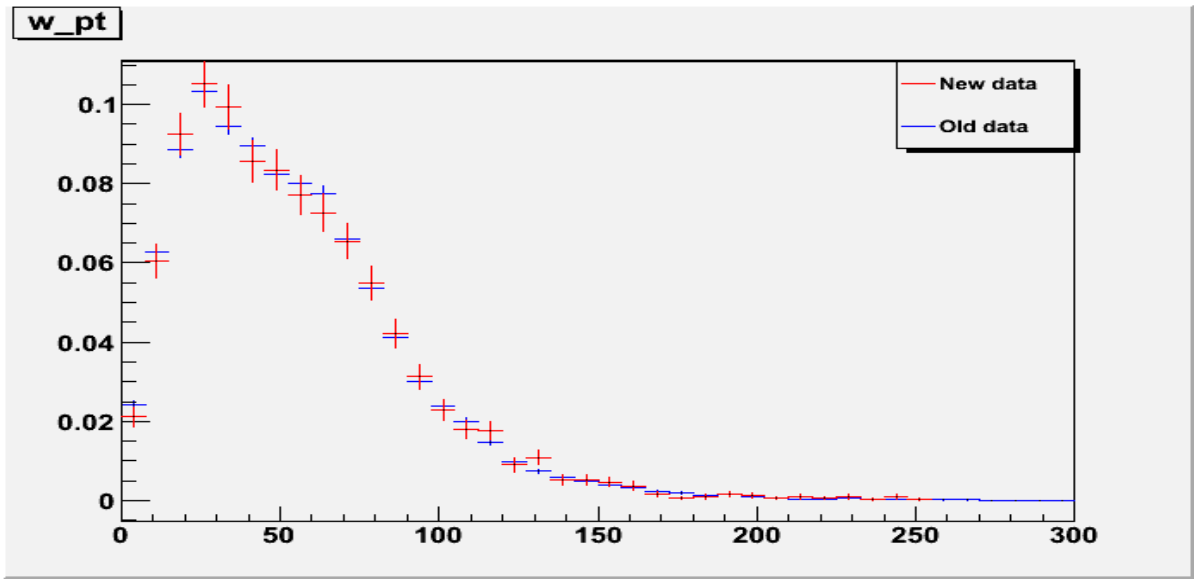

ratio_max2_w_m
2
1.8
1.6
1.4
1.2
1
0.8
0.6
0.4
0.2
0
0
50
100
150
200
250
300

Figure 1.17:


w_pt
New data
Old data
0.1
0.08
0.06
0.04
0.02
0
0
50
100
150
200
250
300

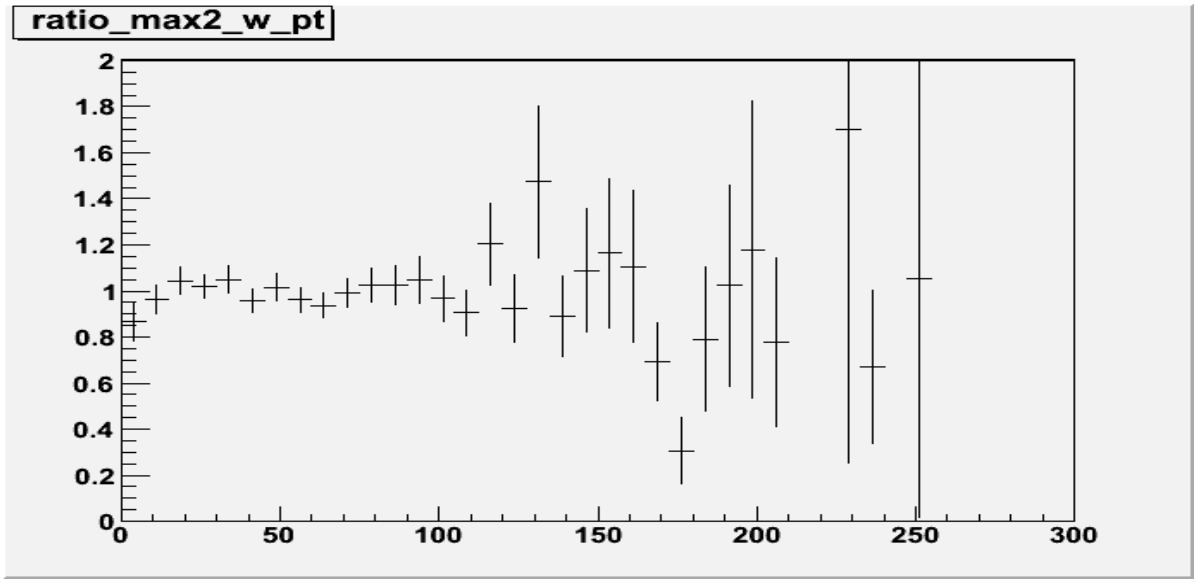
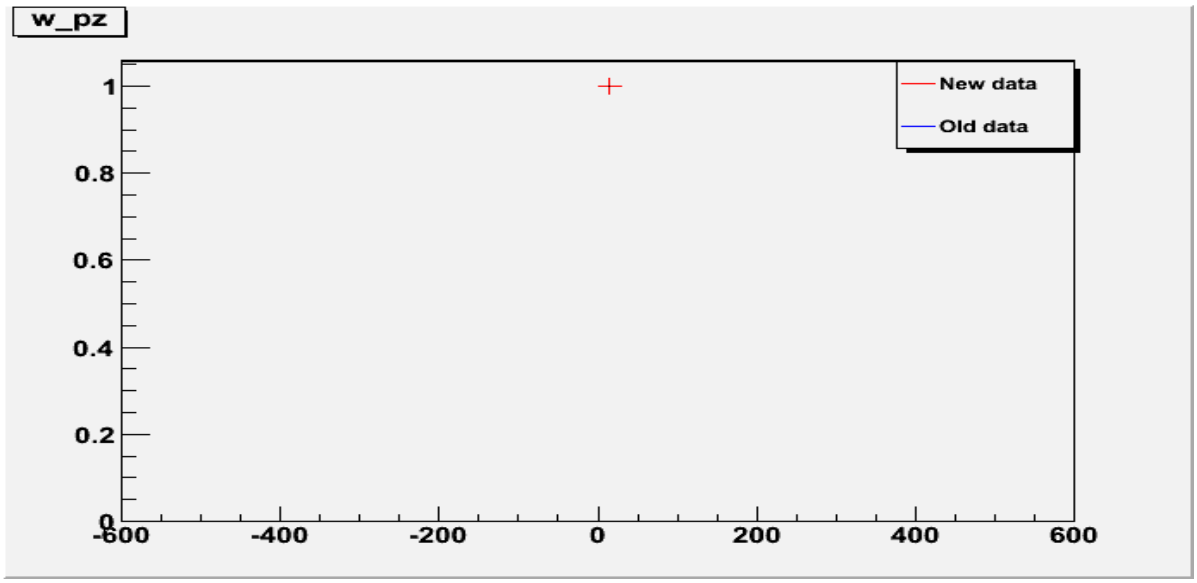

ratio_max2_w_pt
2
1.8
1.6
1.4
1.2
1
0.8
0.6
0.4
0.2
0
0
50
100
150
200
250
300

Figure 1.18:


w_pz
New data
Old data
1
0.8
0.6
0.4
0.2
0
-600
-400
-200
0
200
400
600

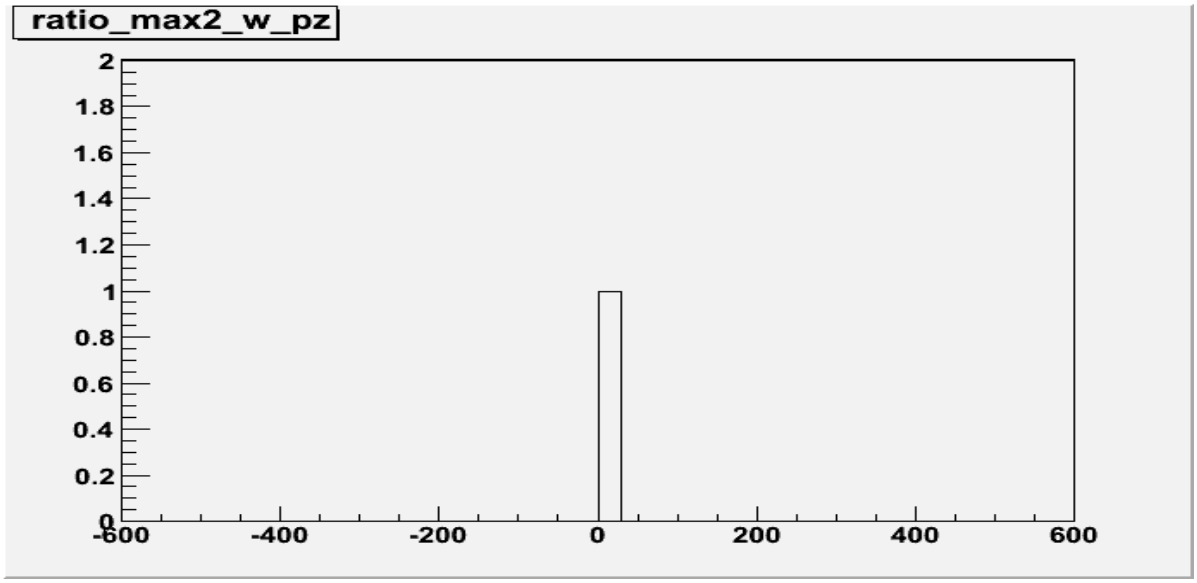
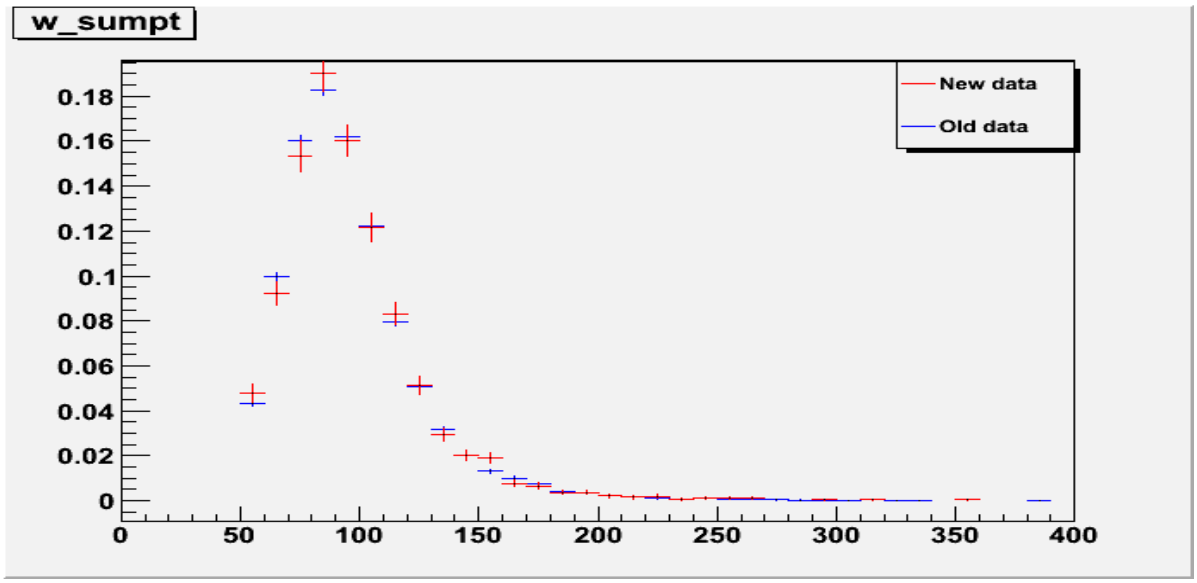

ratio_max2_w_pz
2
1.8
1.6
1.4
1.2
1
0.8
0.6
0.4
0.2
0
-600
-400
-200
0
200
400
600

Figure 1.19:


w_sumpt
New data
Old data
0.18
0.16
0.14
0.12
0.1
0.08
0.06
0.04
0.02
0
0
50
100
150
200
250
300
350
400

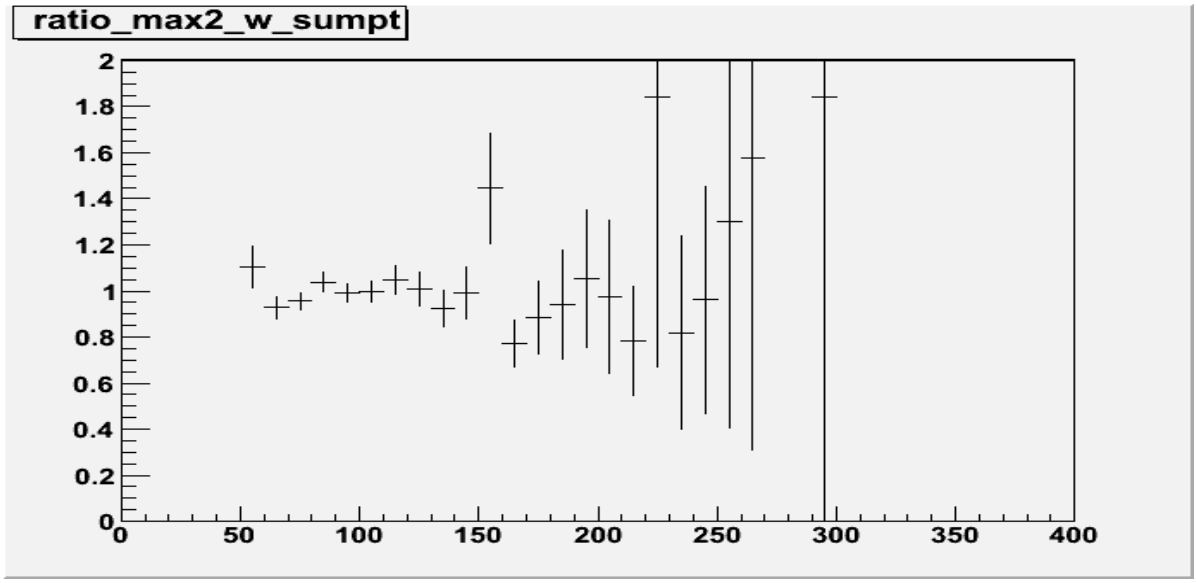
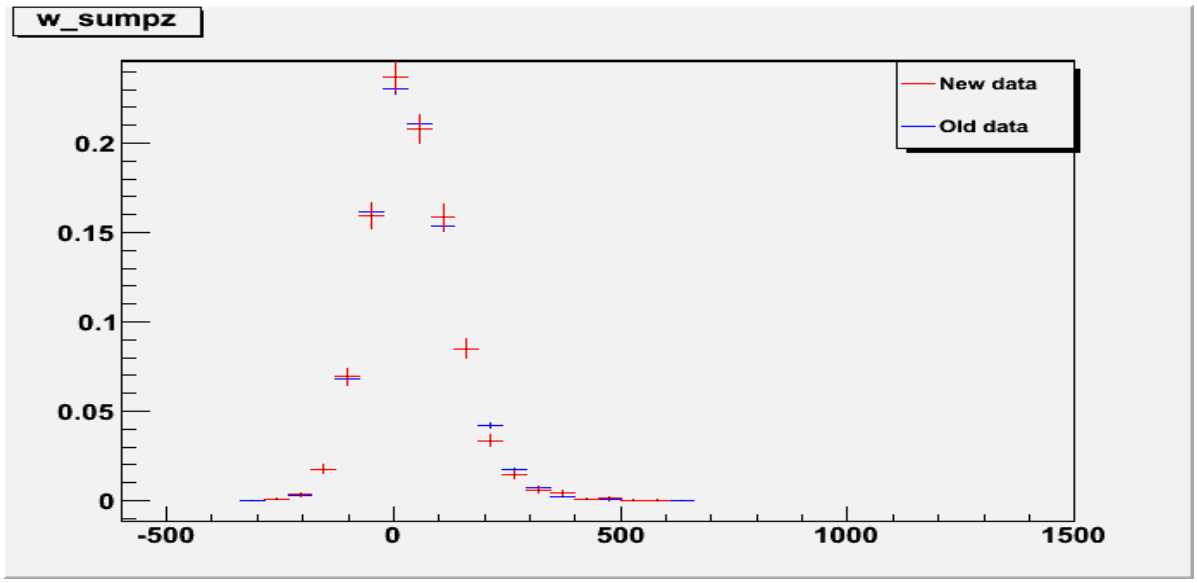

ratio_max2_w_sumpt
2
1.8
1.6
1.4
1.2
1
0.8
0.6
0.4
0.2
0
0
50
100
150
200
250
300
350
400

Figure 1.20:


w_sumpz
New data
Old data
0.2
0.15
0.1
0.05
0
-500
0
500
1000
1500

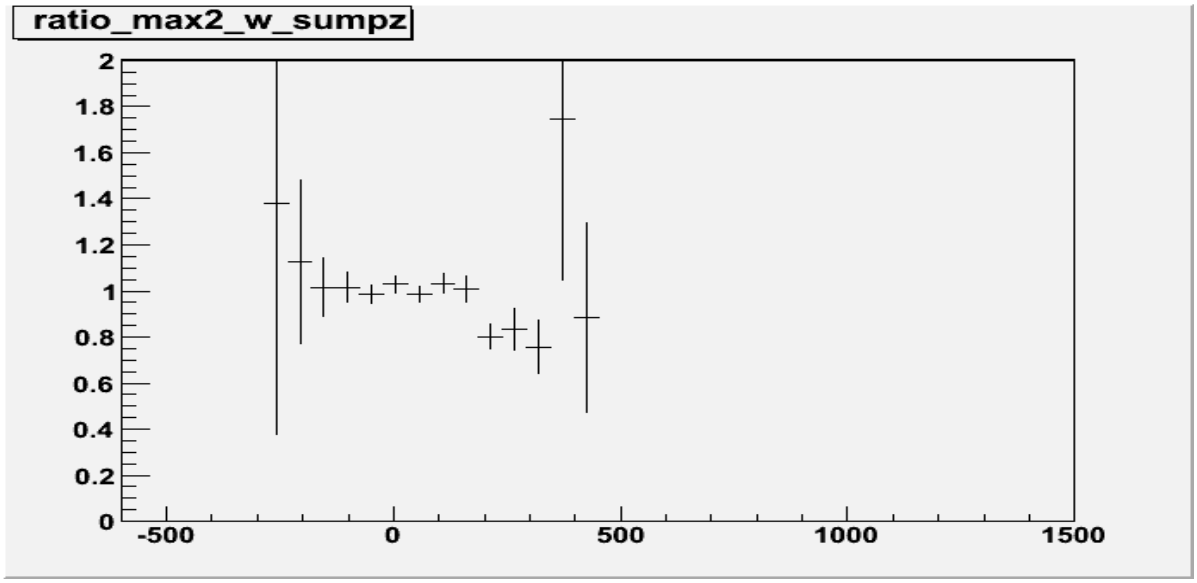
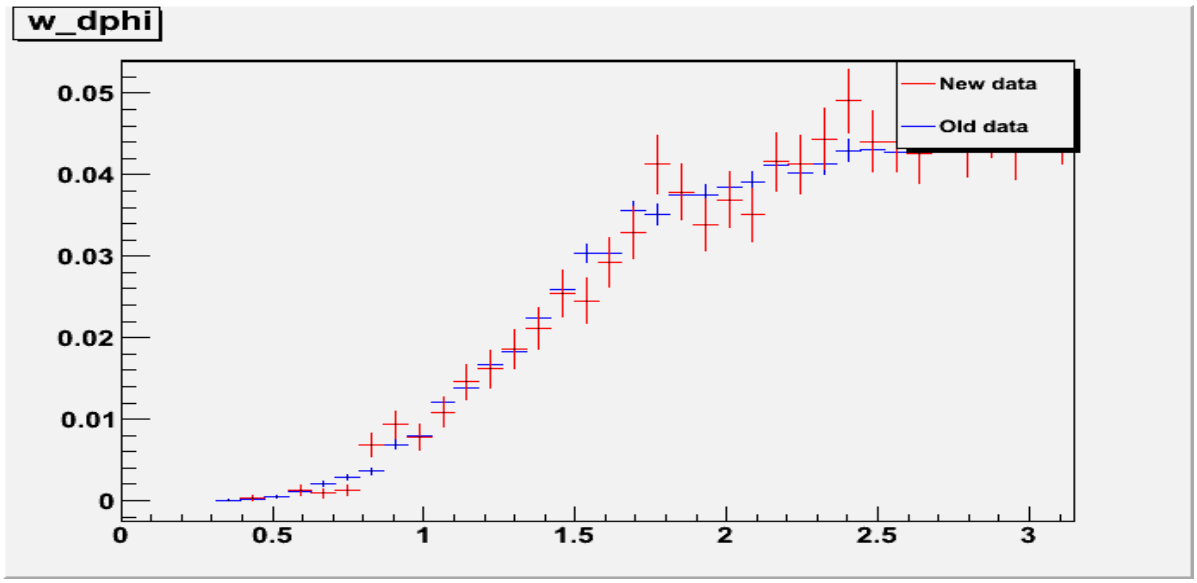

ratio_max2_w_sumpz
2
1.8
1.6
1.4
1.2
1
0.8
0.6
0.4
0.2
0
-500
0
500
1000
1500

Figure 1.21:


w_dphi
New data
Old data
0.05
0.04
0.03
0.02
0.01
0
0
0.5
1
1.5
2
2.5
3

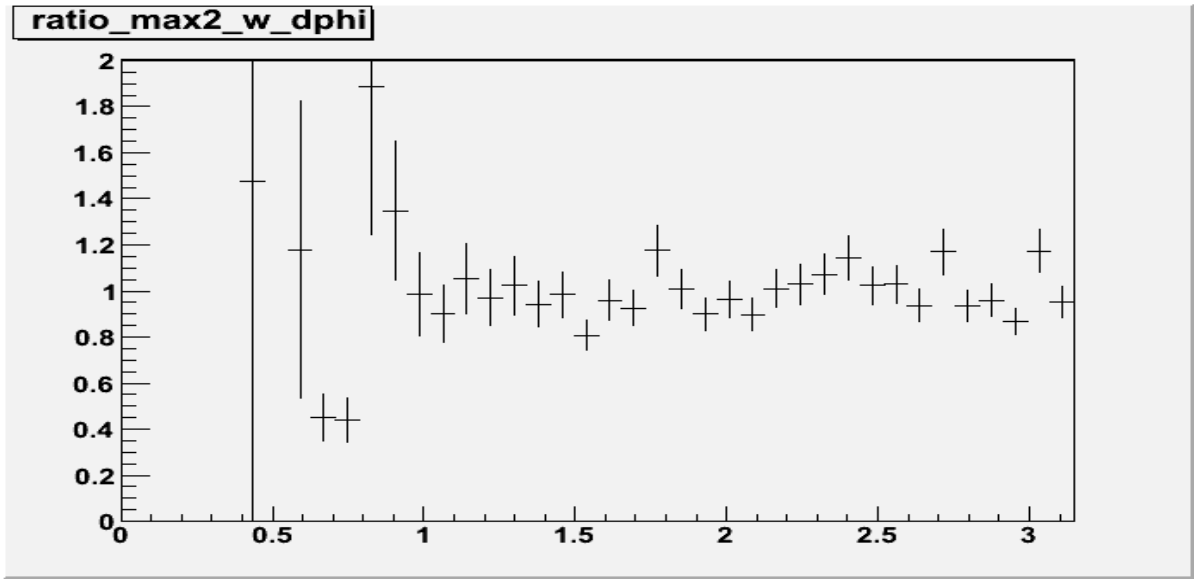
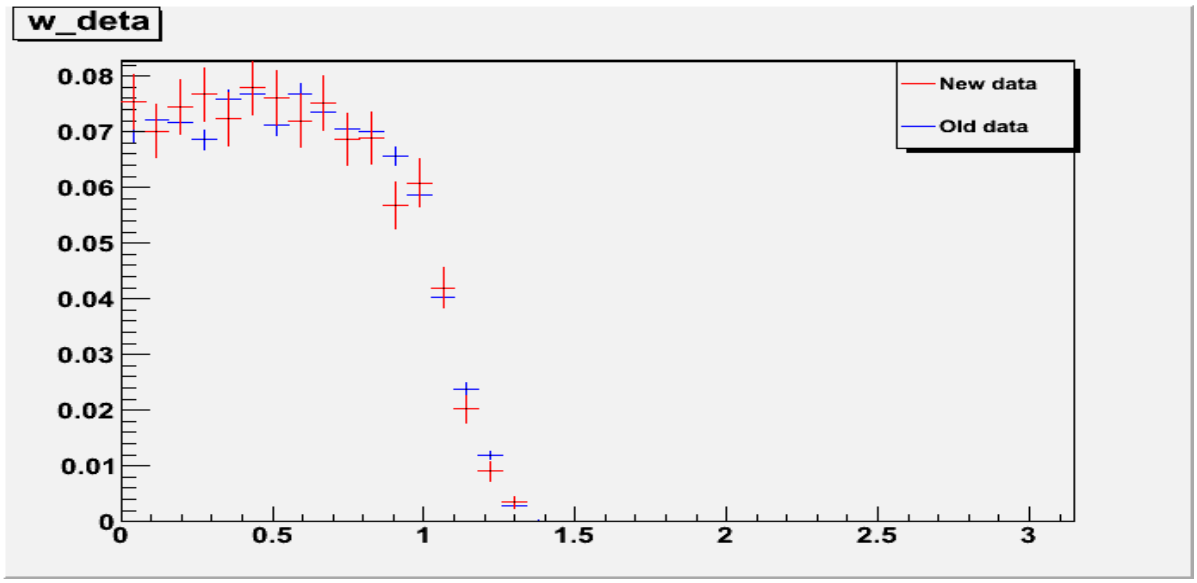

ratio_max2_w_dphi
2
1.8
1.6
1.4
1.2
1
0.8
0.6
0.4
0.2
0
0
0.5
1
1.5
2
2.5
3

Figure 1.22:


w_deta
New data
Old data
0.08
0.07
0.06
0.05
0.04
0.03
0.02
0.01
0
0
0.5
1
1.5
2
2.5
3

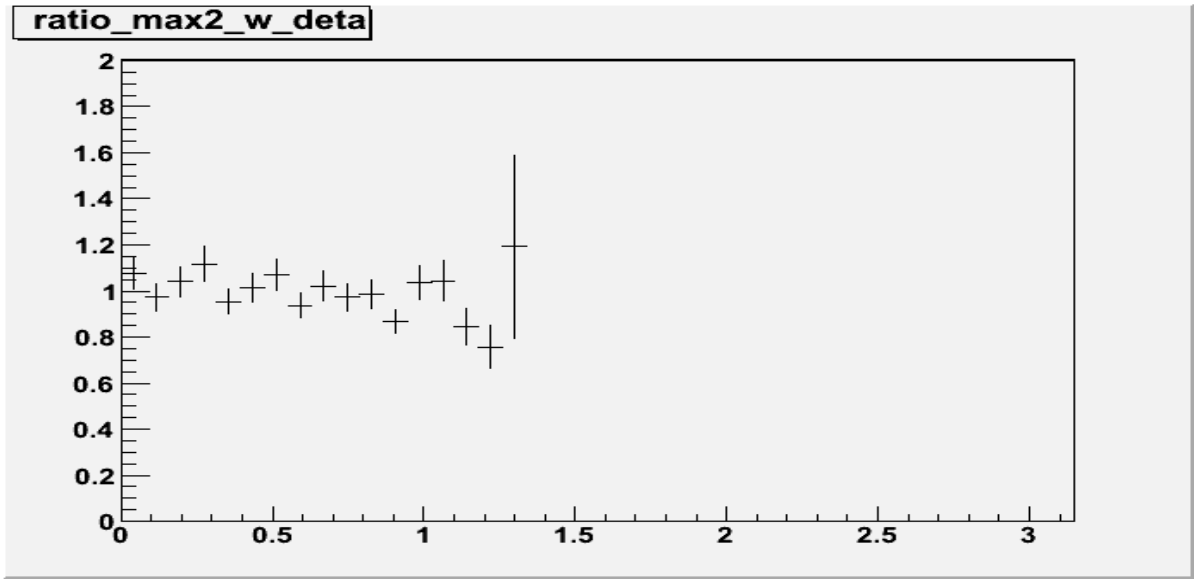
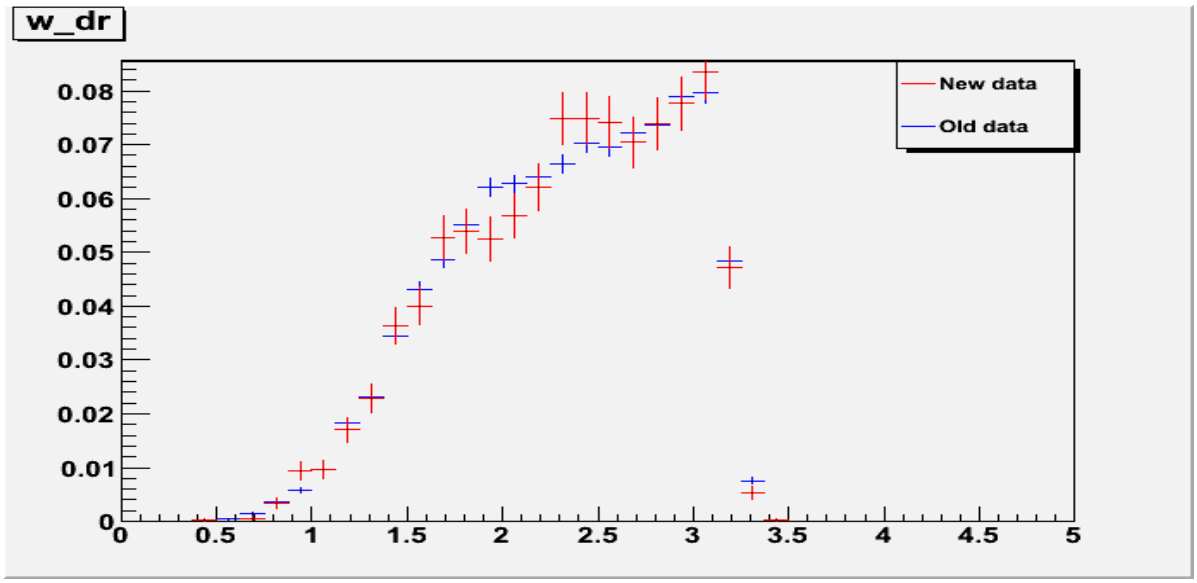

ratio_max2_w_deta
2
1.8
1.6
1.4
1.2
1
0.8
0.6
0.4
0.2
0
0
0.5
1
1.5
2
2.5
3

Figure 1.23:


w_dr
New data
Old data
0.08
0.07
0.06
0.05
0.04
0.03
0.02
0.01
0
0
0.5
1
1.5
2
2.5
3
3.5
4
4.5
5

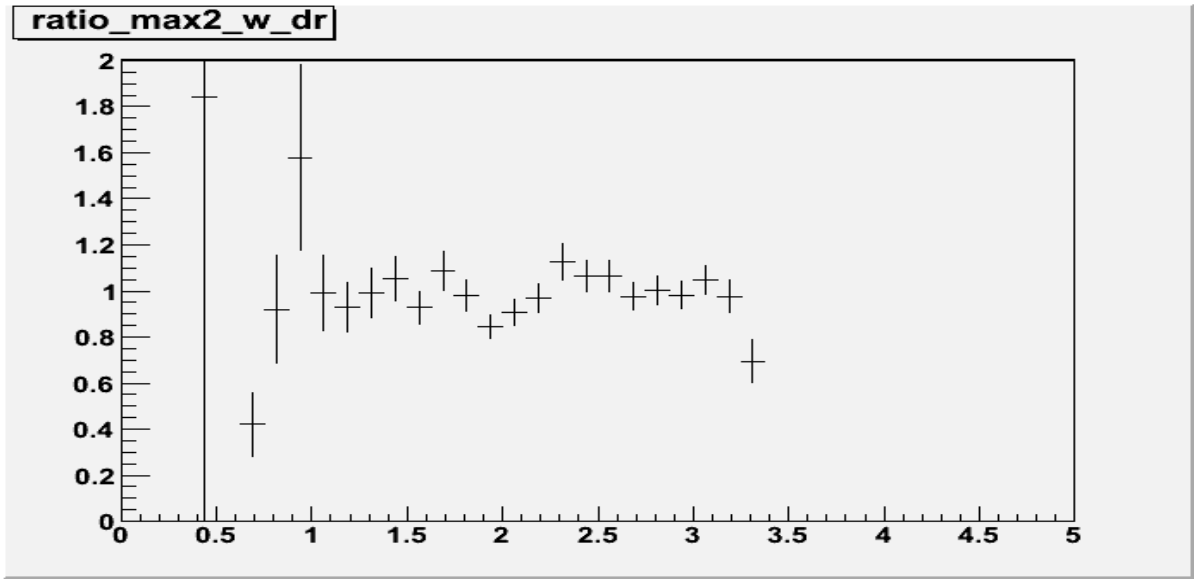
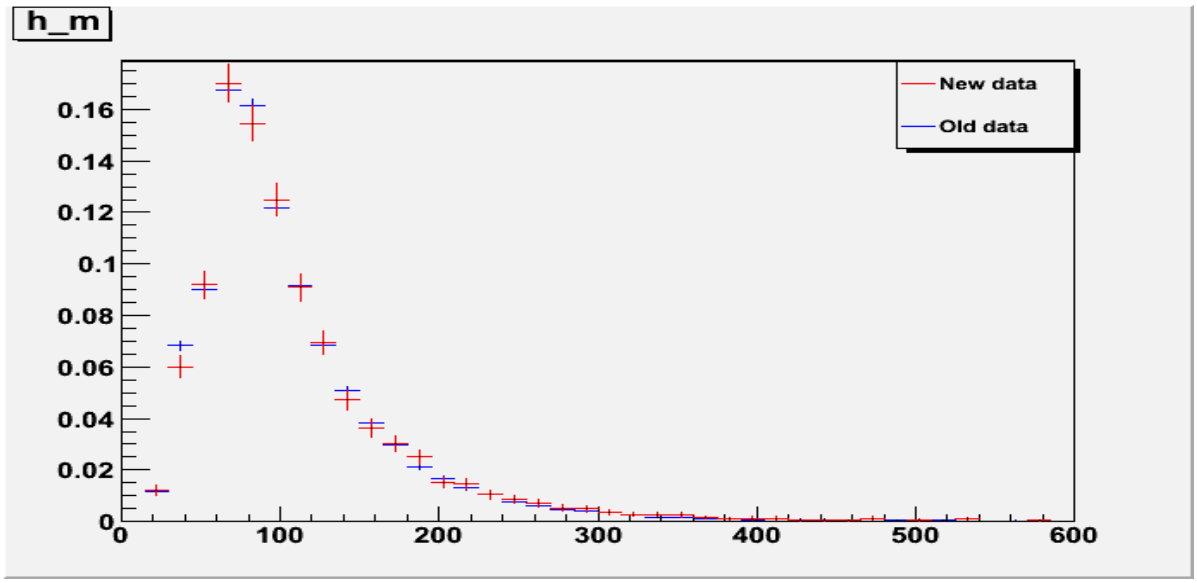

ratio_max2_w_dr
2
1.8
1.6
1.4
1.2
1
0.8
0.6
0.4
0.2
0
0
0.5
1
1.5
2
2.5
3
3.5
4
4.5
5

Figure 1.24:


h_m
New data
Old data
0.16
0.14
0.12
0.1
0.08
0.06
0.04
0.02
0
0
100
200
300
400
500
600

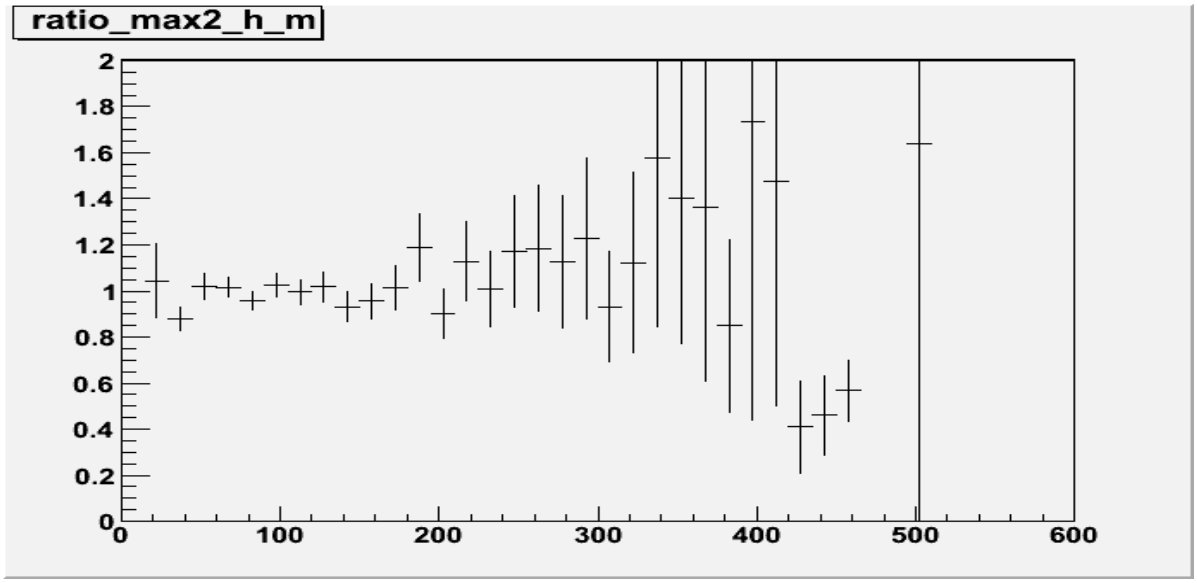
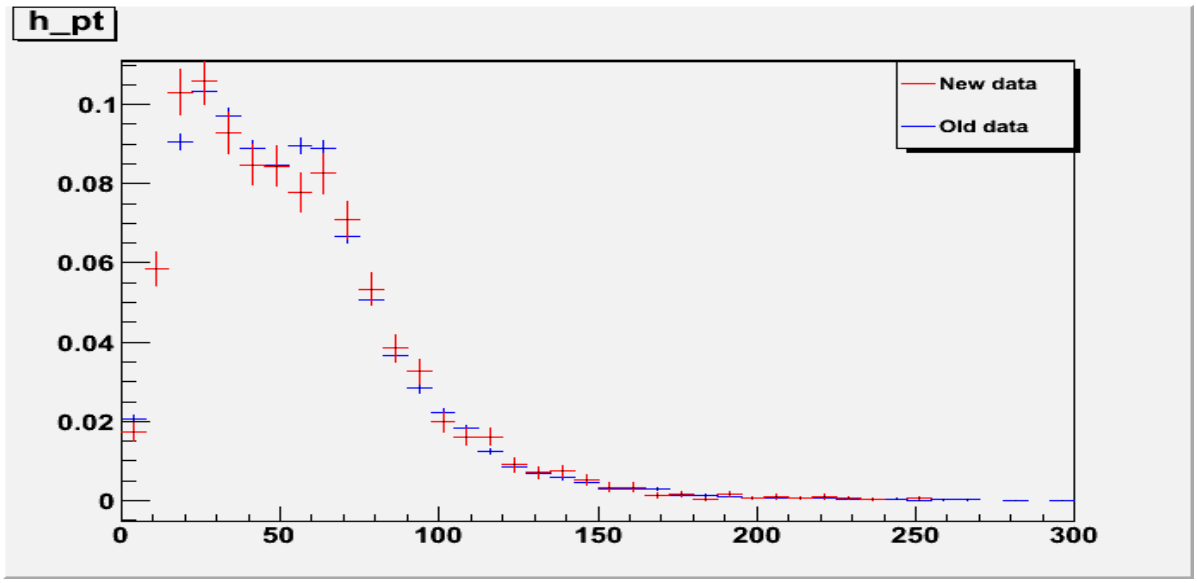

ratio_max2_h_m
2
1.8
1.6
1.4
1.2
1
0.8
0.6
0.4
0.2
0
0
100
200
300
400
500
600

Figure 1.25:


h_pt
New data
Old data
0.1
0.08
0.06
0.04
0.02
0
0
50
100
150
200
250
300

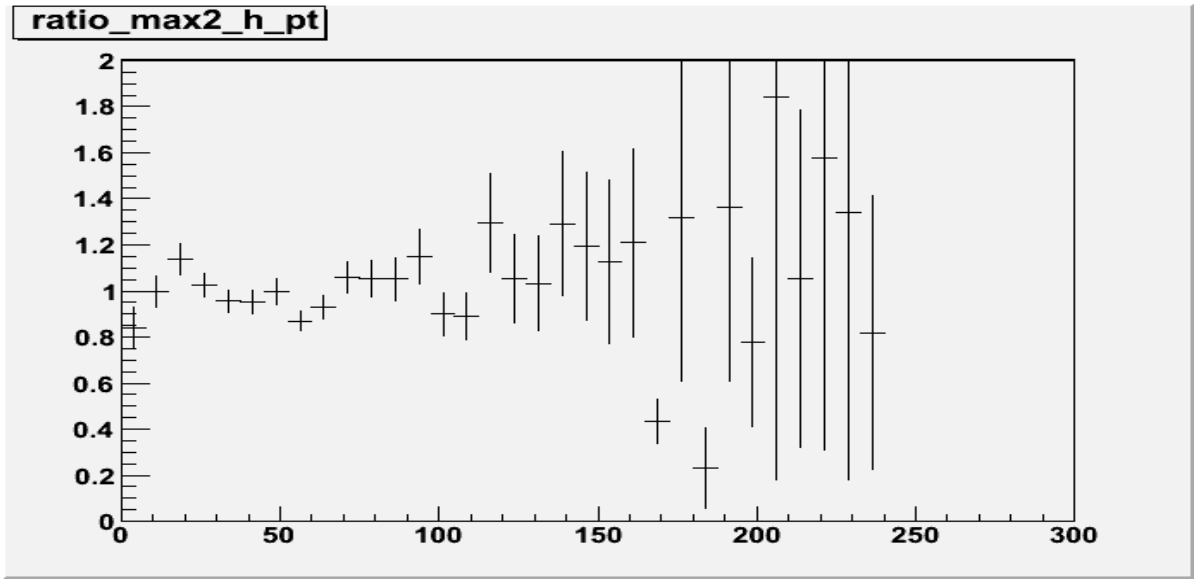
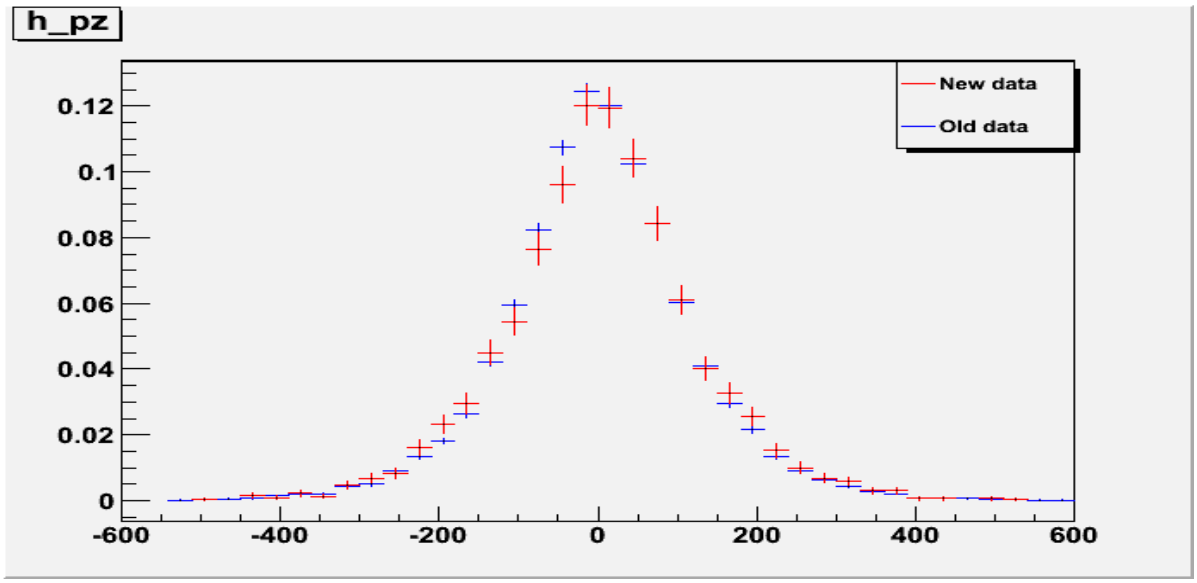

ratio_max2_h_pt
2
1.8
1.6
1.4
1.2
1
0.8
0.6
0.4
0.2
0
0
50
100
150
200
250
300

Figure 1.26:


h_pz
New data
Old data
0.12
0.1
0.08
0.06
0.04
0.02
0
-600
-400
-200
0
200
400
600

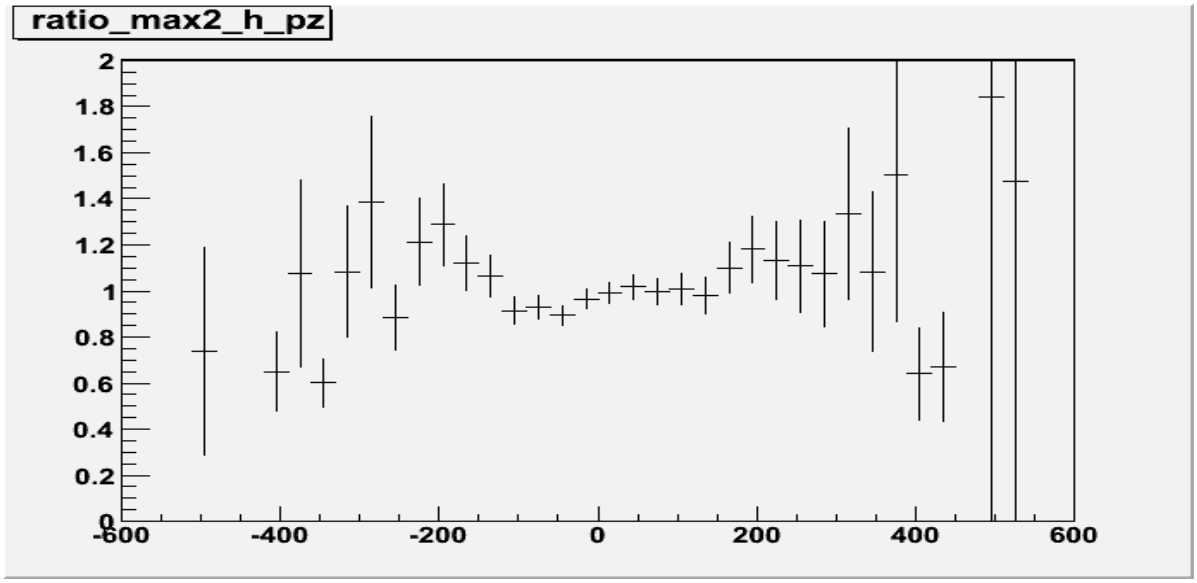
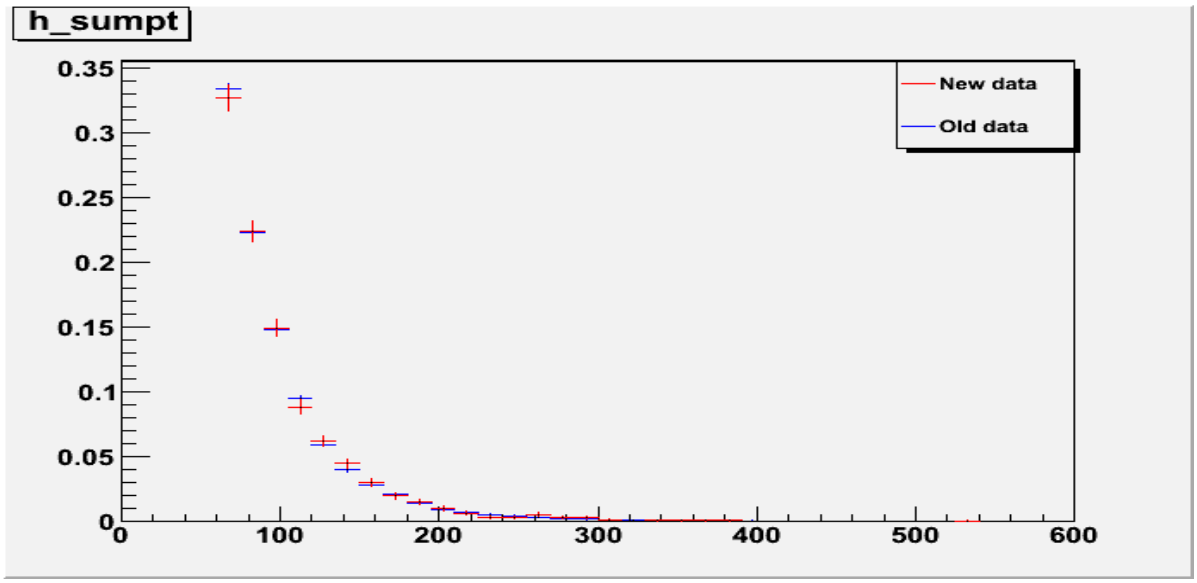

ratio_max2_h_pz
2
1.8
1.6
1.4
1.2
1
0.8
0.6
0.4
0.2
0
-600
-400
-200
0
200
400
600

Figure 1.27:


h_sumpt
New data
Old data
0.35
0.3
0.25
0.2
0.15
0.1
0.05
0
0
100
200
300
400
500
600

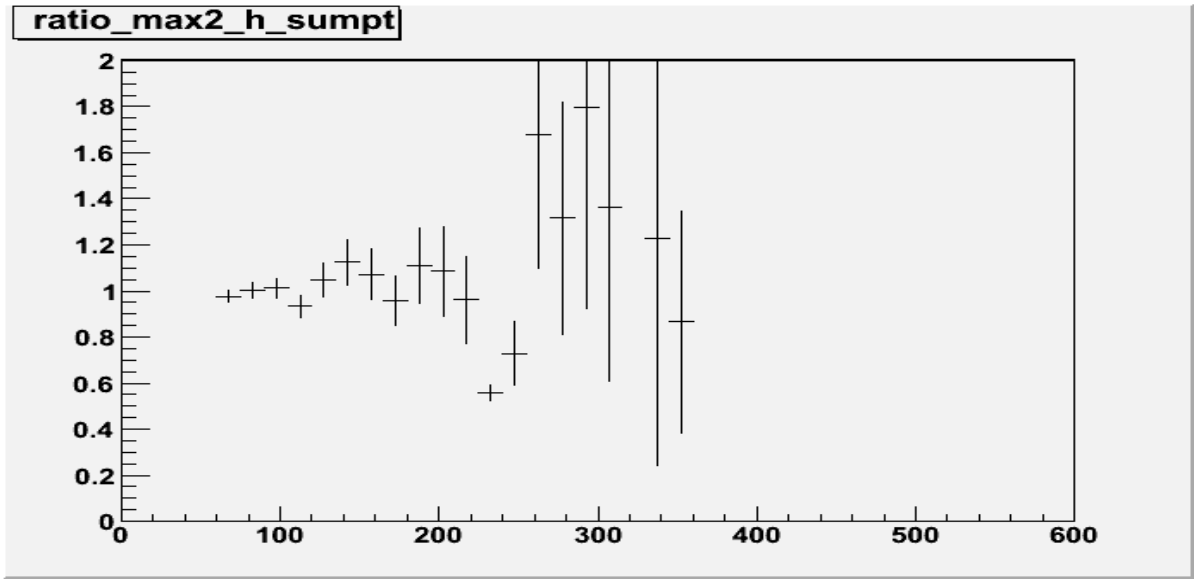
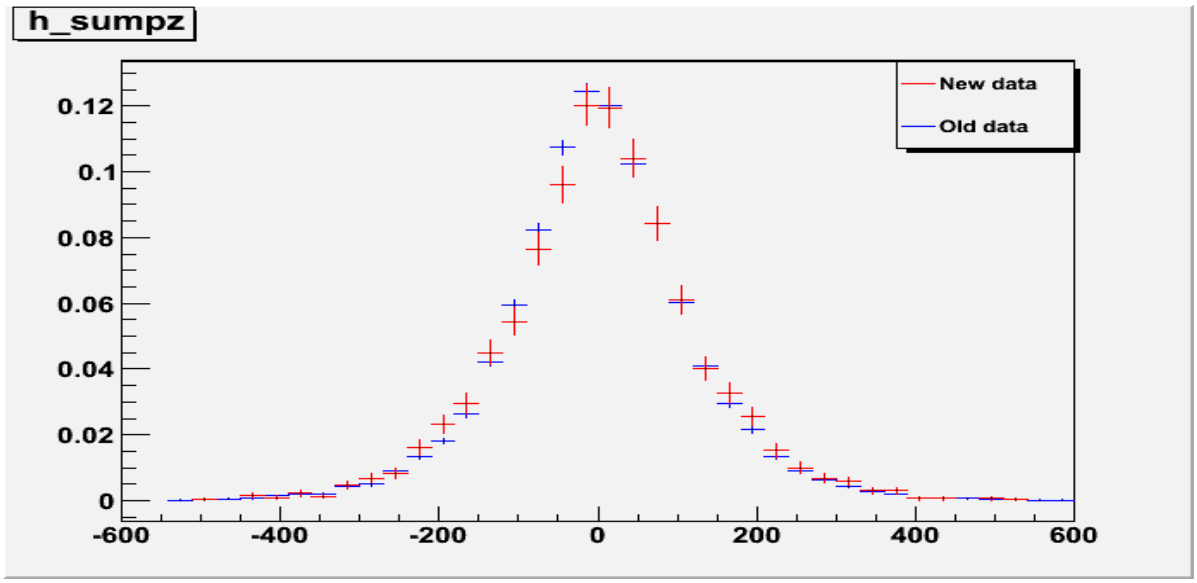

ratio_max2_h_sumpt
2
1.8
1.6
1.4
1.2
1
0.8
0.6
0.4
0.2
0
0
100
200
300
400
500
600

Figure 1.28:


h_sumpz
New data
Old data
0.12
0.1
0.08
0.06
0.04
0.02
0
-600
-400
-200
0
200
400
600

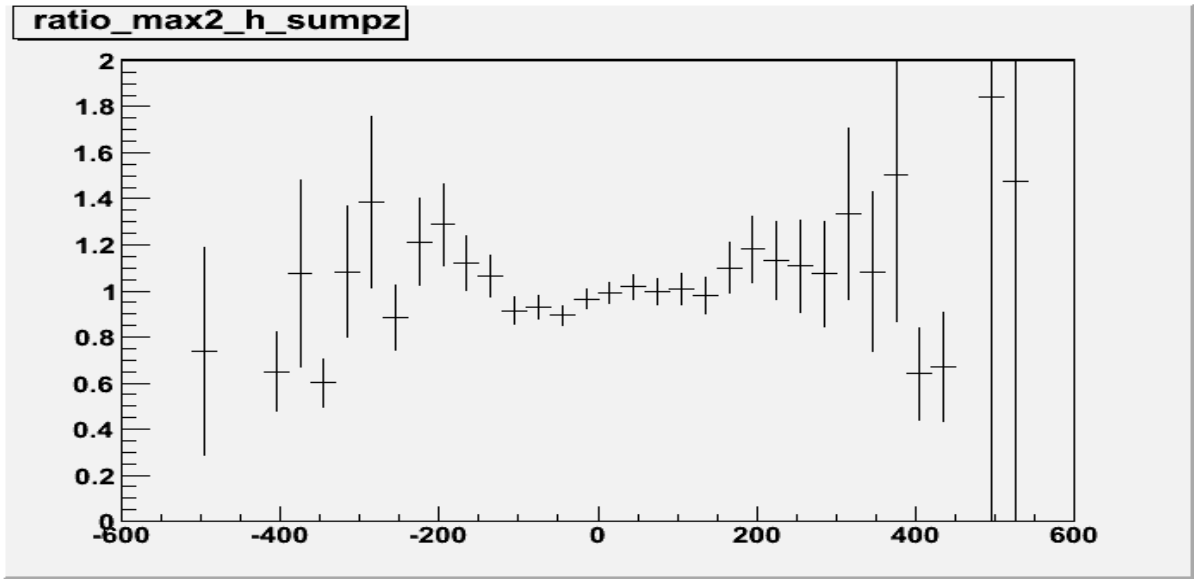
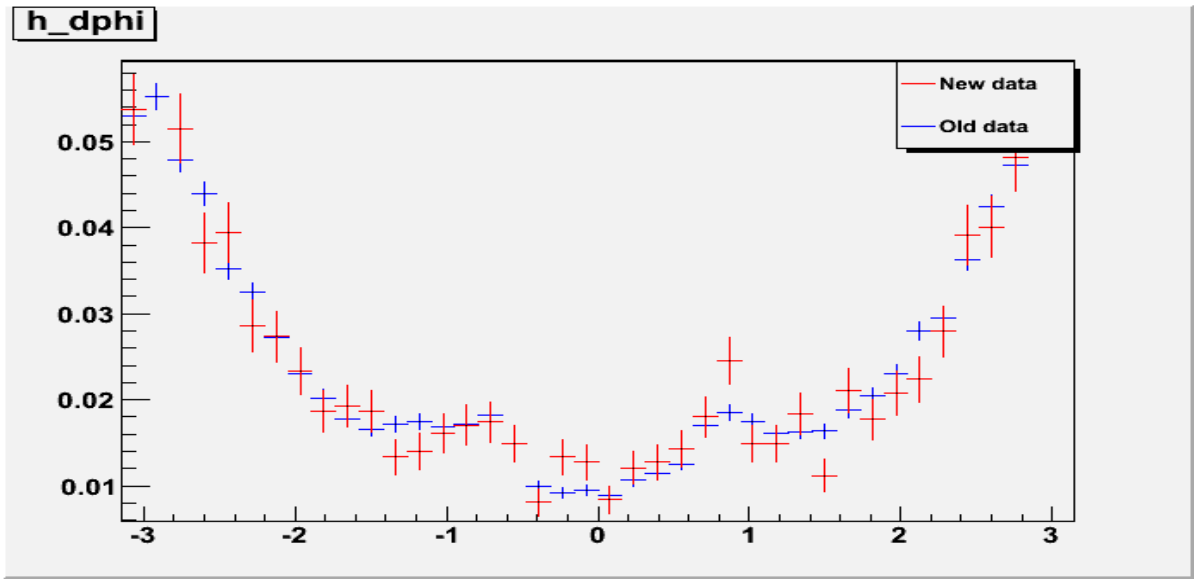

ratio_max2_h_sumpz
2
1.8
1.6
1.4
1.2
1
0.8
0.6
0.4
0.2
0
-600
-400
-200
0
200
400
600

Figure 1.29:


h_dphi
New data
Old data
0.05
0.04
0.03
0.02
0.01
-3
-2
-1
0
1
2
3

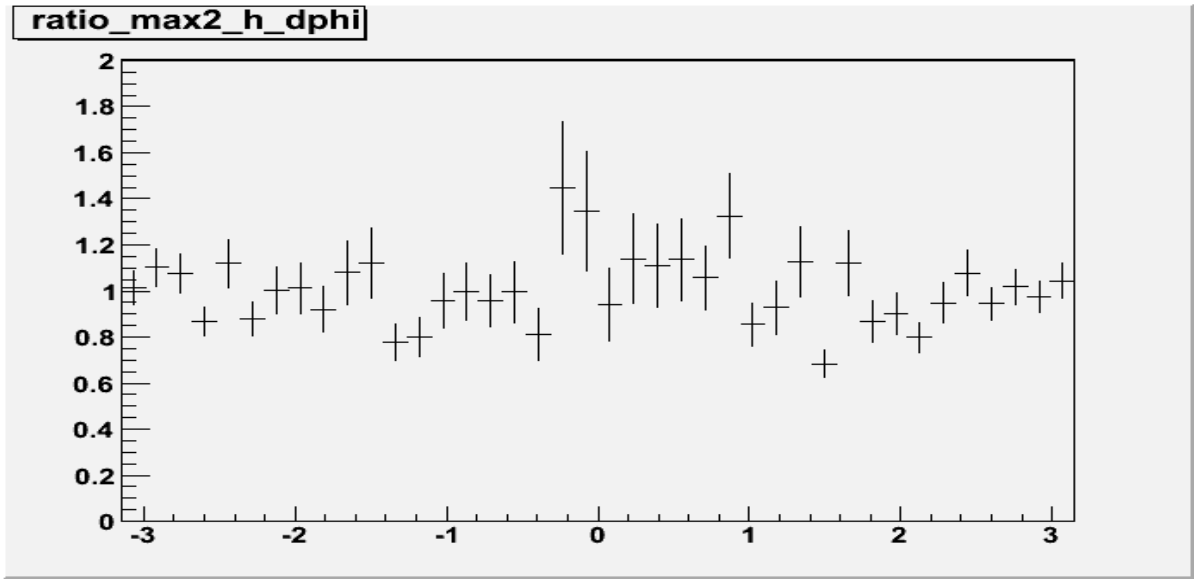
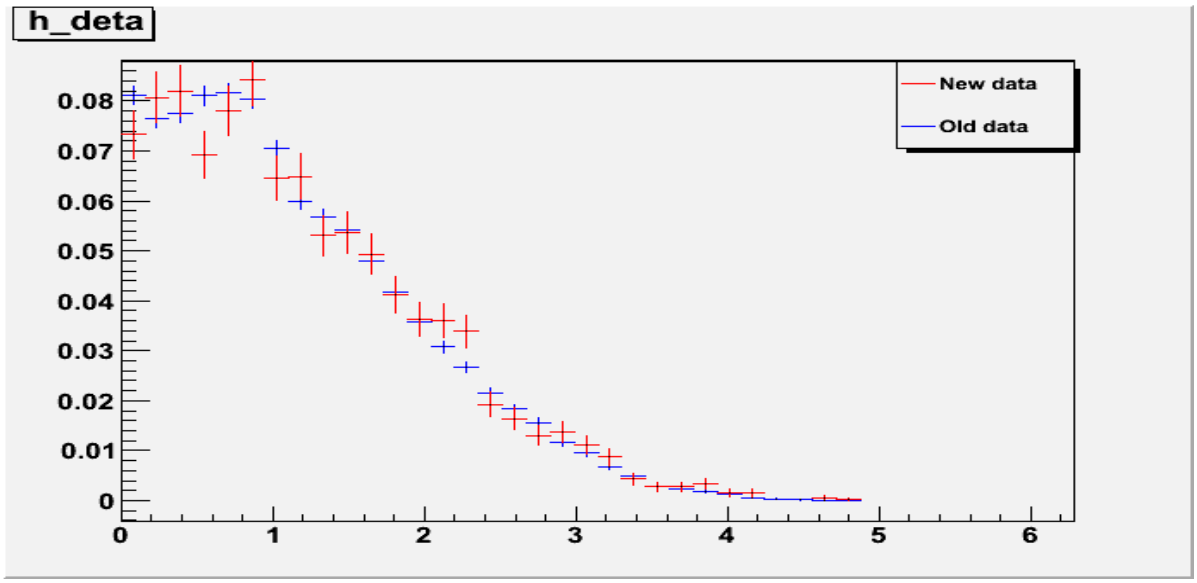

ratio_max2_h_dphi
2
1.8
1.6
1.4
1.2
1
0.8
0.6
0.4
0.2
0
-3
-2
-1
0
1
2
3

Figure 1.30:


h_deta
New data
Old data
0.08
0.07
0.06
0.05
0.04
0.03
0.02
0.01
0
0
1
2
3
4
5
6

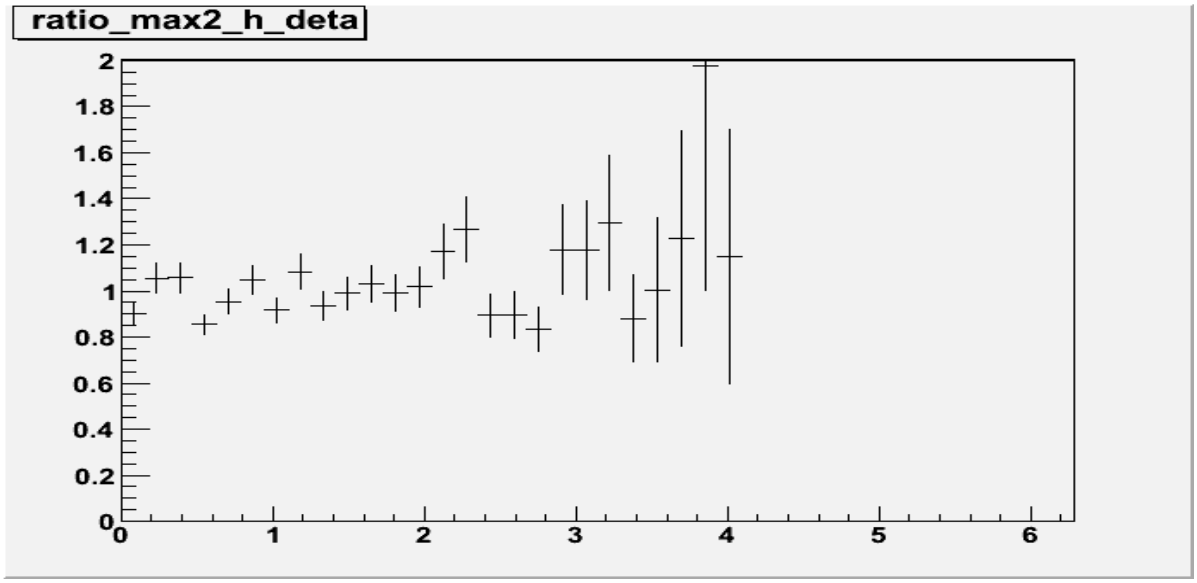
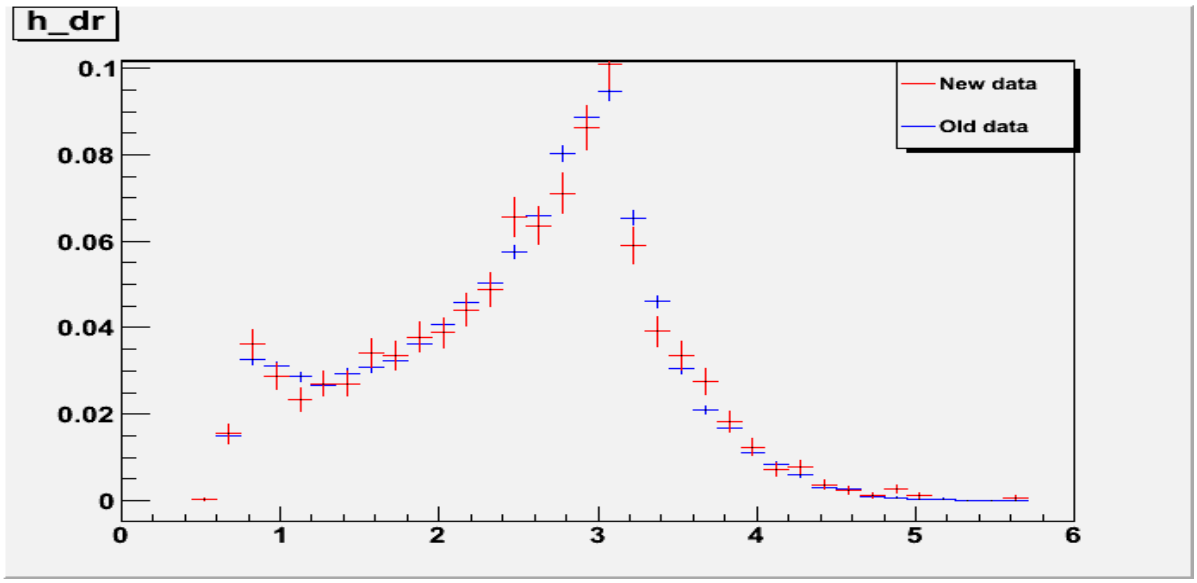

ratio_max2_h_deta
2
1.8
1.6
1.4
1.2
1
0.8
0.6
0.4
0.2
0
0
1
2
3
4
5
6

Figure 1.31:


h_dr
New data
Old data
0.1
0.08
0.06
0.04
0.02
0
0
1
2
3
4
5
6

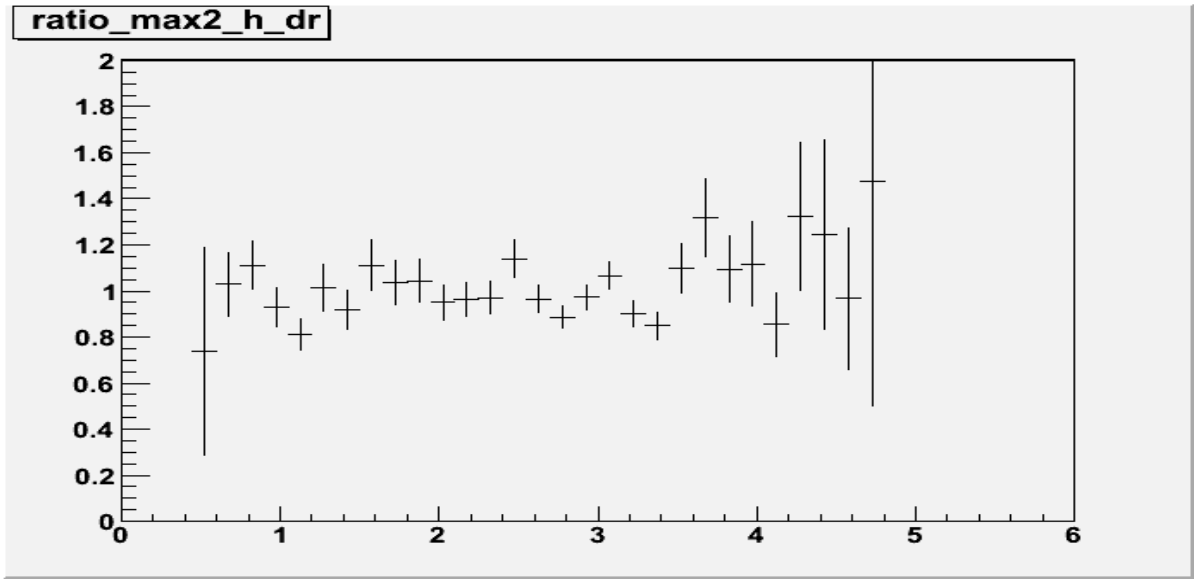
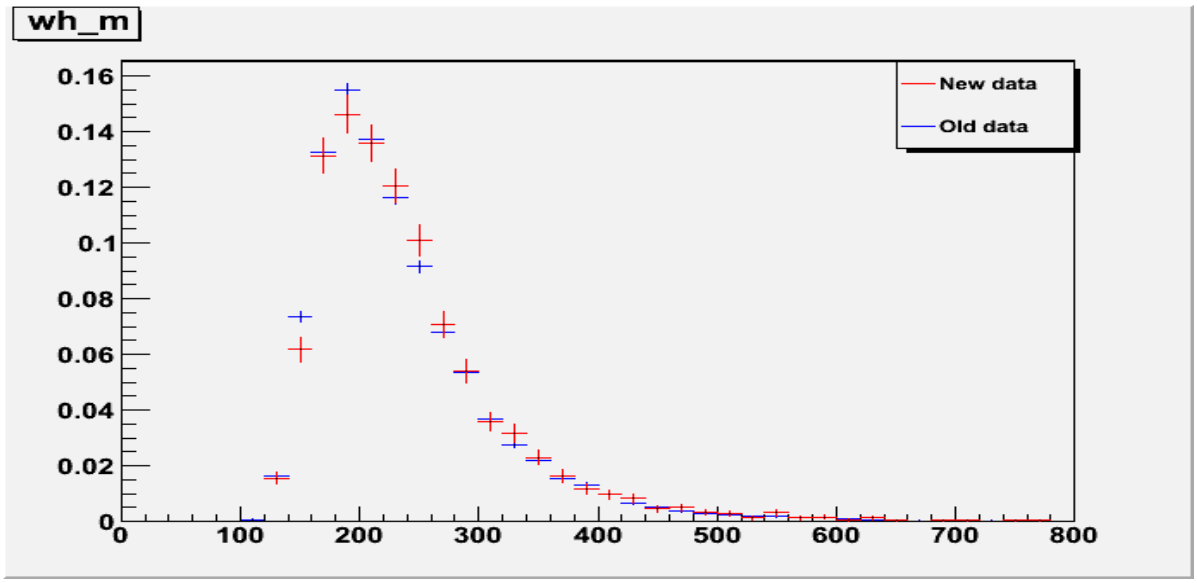

ratio_max2_h_dr
2
1.8
1.6
1.4
1.2
1
0.8
0.6
0.4
0.2
0
0
1
2
3
4
5
6

Figure 1.32:


wh_m
New data
Old data
0.16
0.14
0.12
0.1
0.08
0.06
0.04
0.02
0
0
100
200
300
400
500
600
700
800

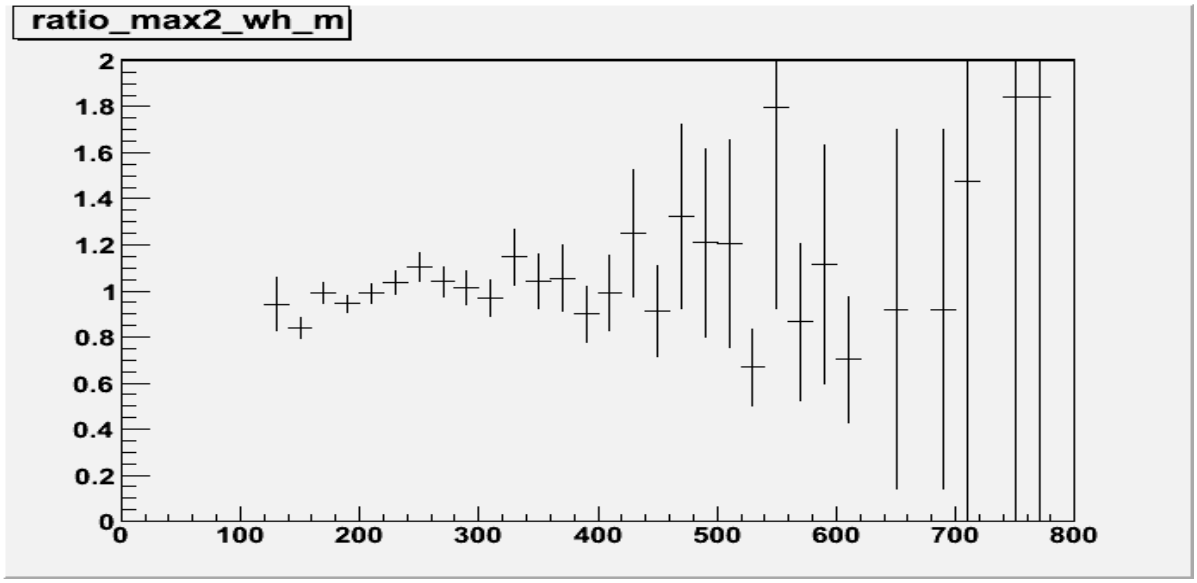
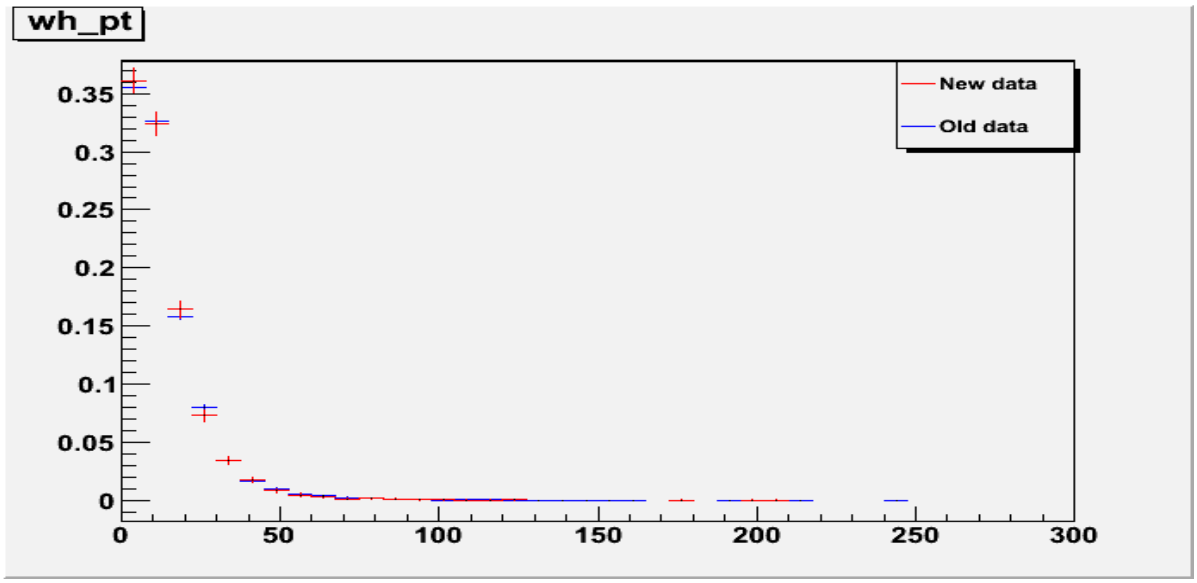

ratio_max2_wh_m
2
1.8
1.6
1.4
1.2
1
0.8
0.6
0.4
0.2
0
0
100
200
300
400
500
600
700
800

Figure 1.33:


wh_pt
New data
Old data
0.35
0.3
0.25
0.2
0.15
0.1
0.05
0
0
50
100
150
200
250
300

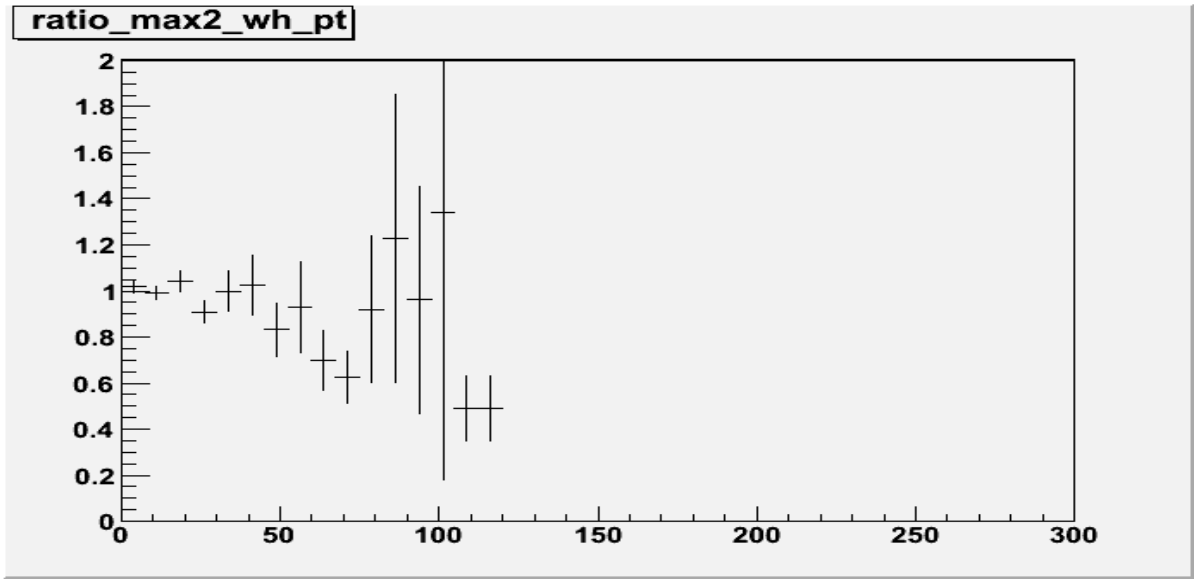
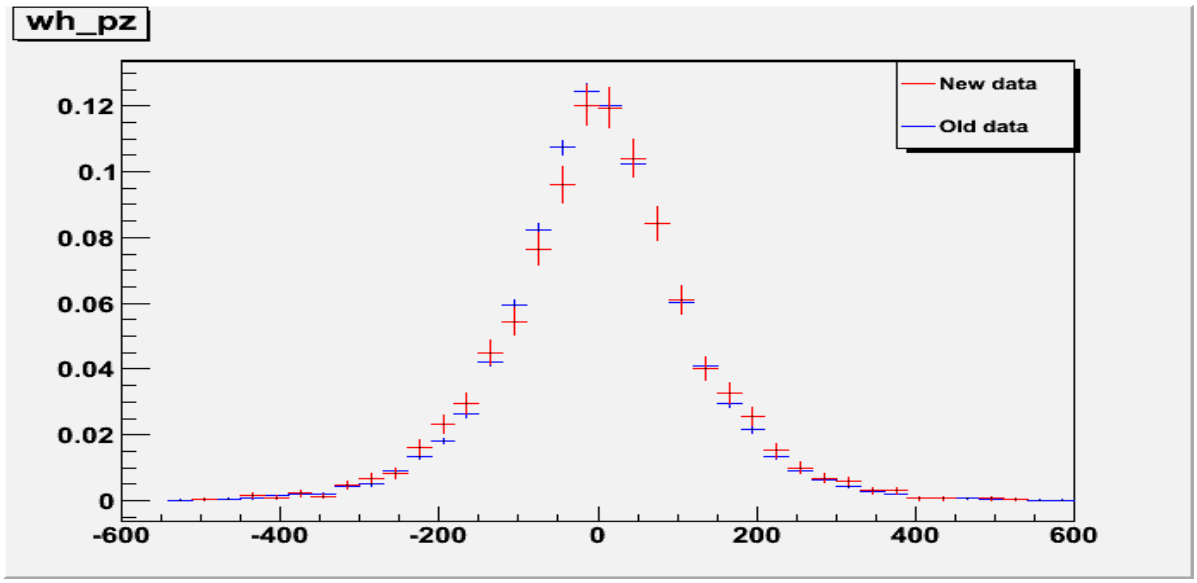

ratio_max2_wh_pt
2
1.8
1.6
1.4
1.2
1
0.8
0.6
0.4
0.2
0
0
50
100
150
200
250
300

Figure 1.34:


wh_pz
New data
Old data
0.12
0.1
0.08
0.06
0.04
0.02
0
-600
-400
-200
0
200
400
600

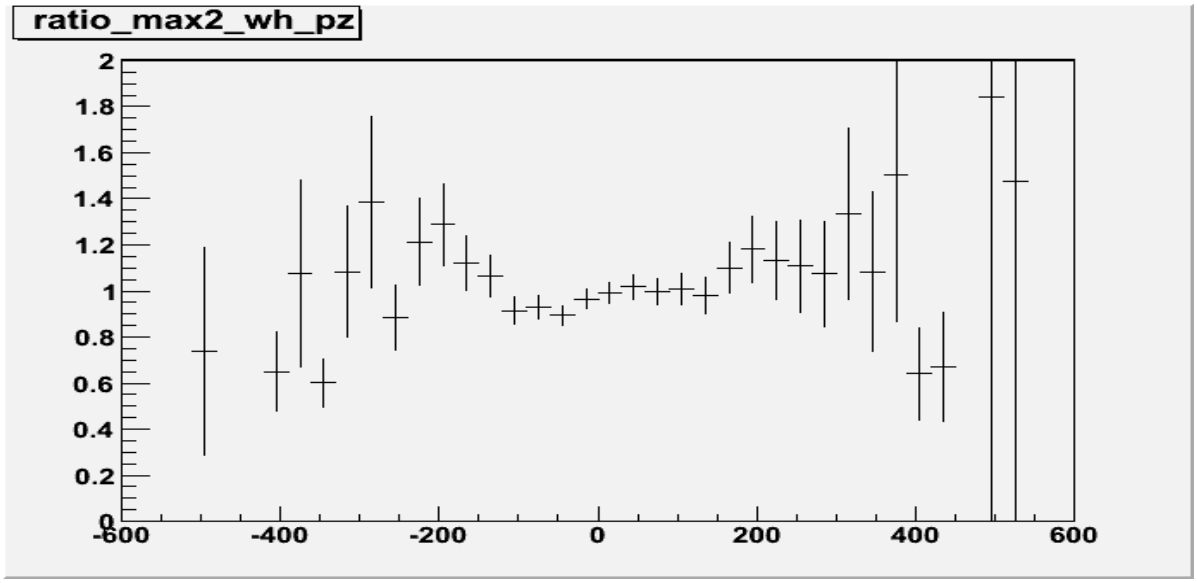
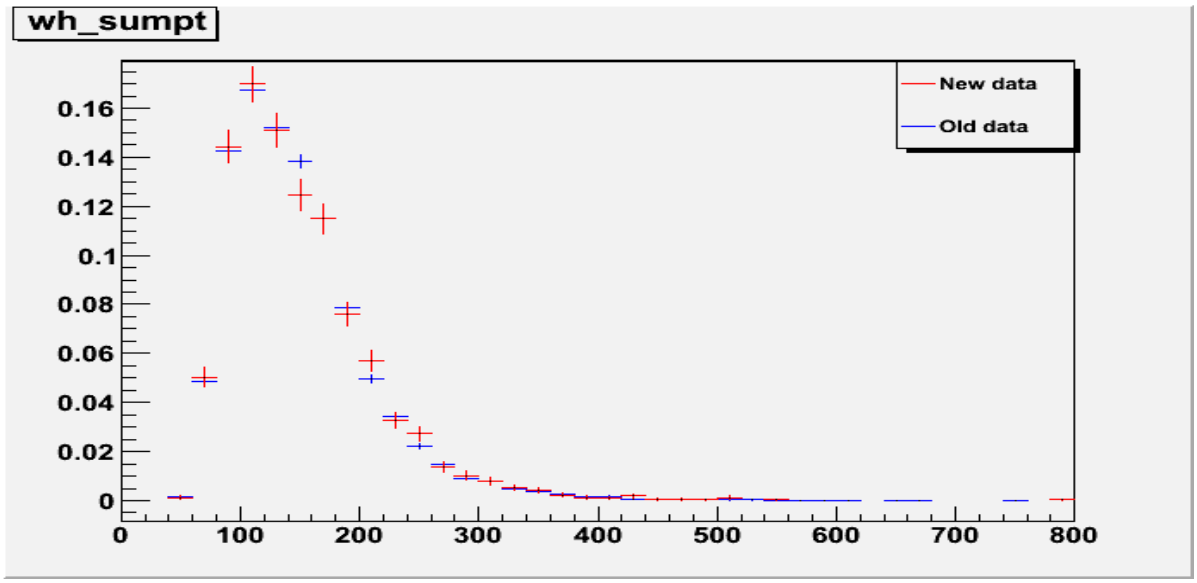

ratio_max2_wh_pz
2
1.8
1.6
1.4
1.2
1
0.8
0.6
0.4
0.2
0
-600
-400
-200
0
200
400
600

Figure 1.35:


wh_sumpt
New data
Old data
0.16
0.14
0.12
0.1
0.08
0.06
0.04
0.02
0
0
100
200
300
400
500
600
700
800

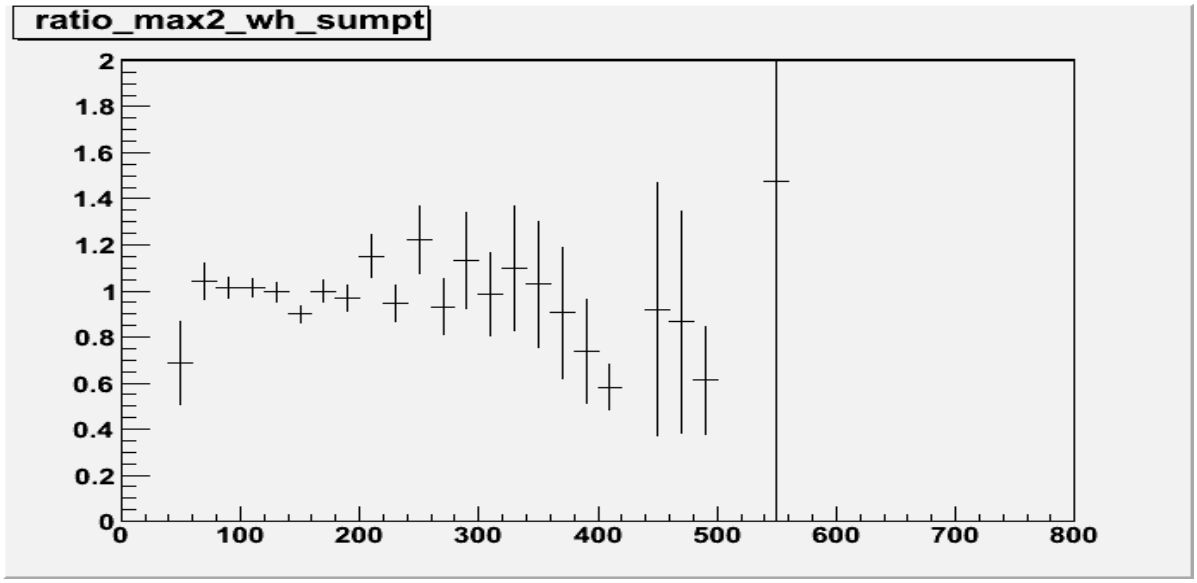
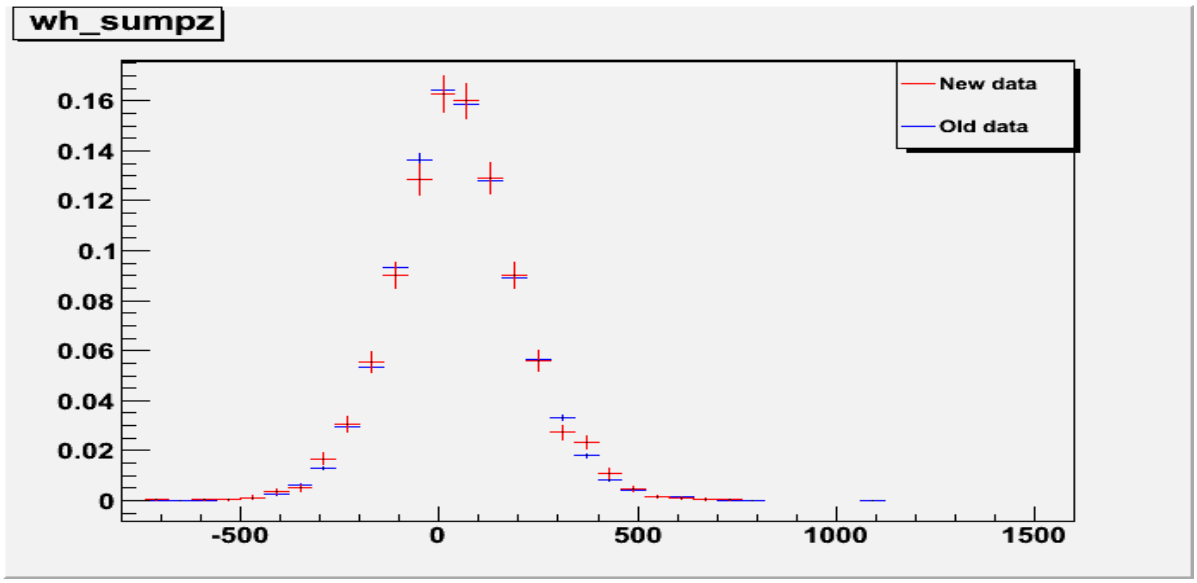

ratio_max2_wh_sumpt
2
1.8
1.6
1.4
1.2
1
0.8
0.6
0.4
0.2
0
0
100
200
300
400
500
600
700
800

Figure 1.36:


wh_sumpz
New data
Old data
0.16
0.14
0.12
0.1
0.08
0.06
0.04
0.02
0
-500
0
500
1000
1500

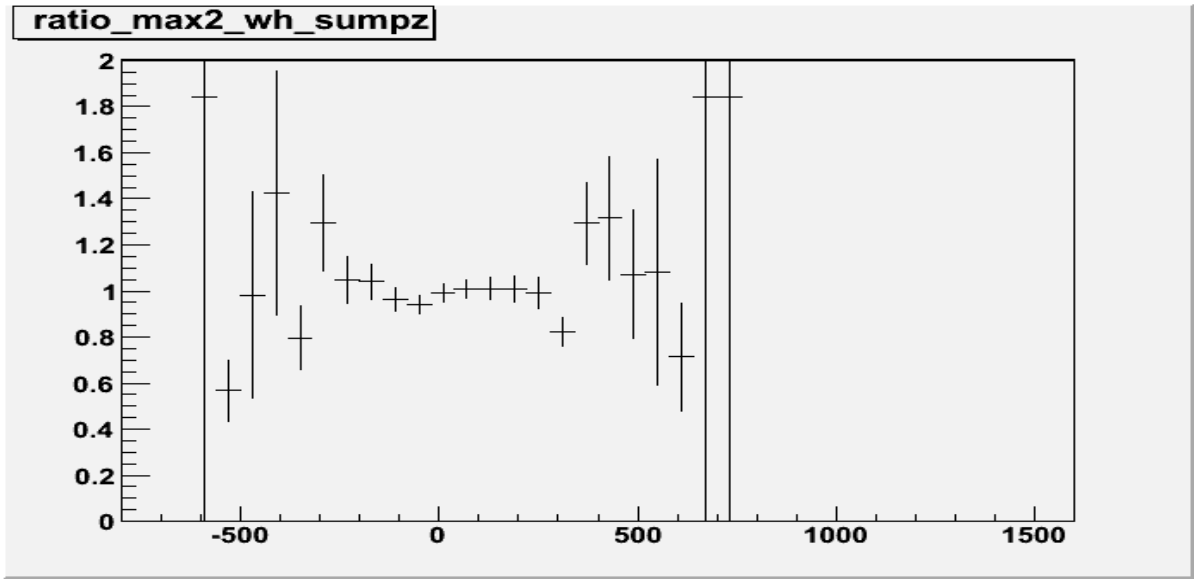
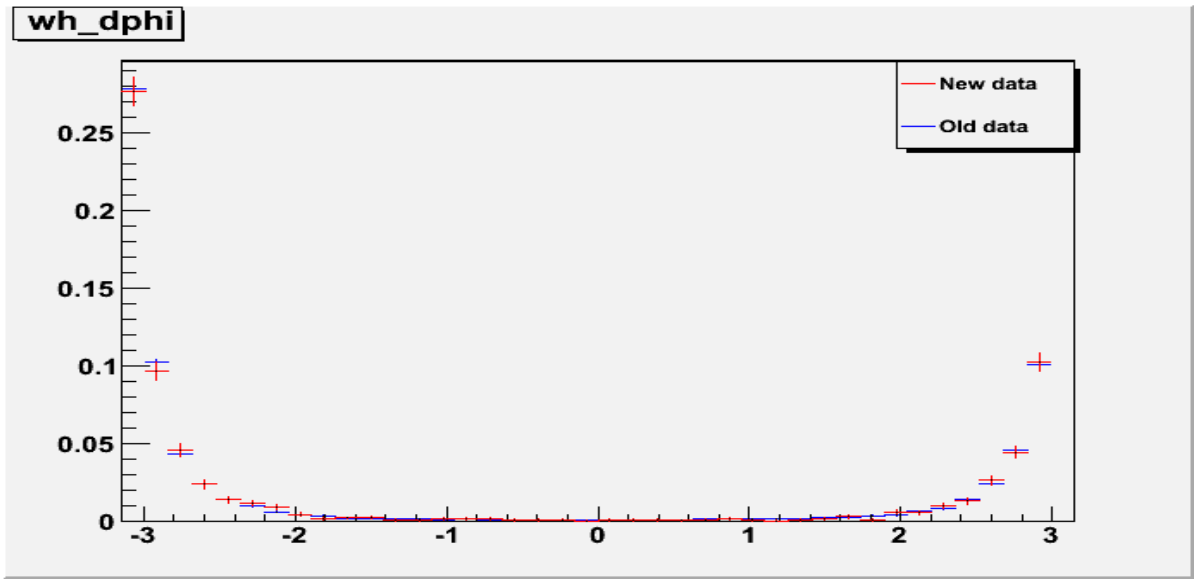

ratio_max2_wh_sumpz
2
1.8
1.6
1.4
1.2
1
0.8
0.6
0.4
0.2
0
-500
0
500
1000
1500

Figure 1.37:


wh_dphi
New data
Old data
0.25
0.2
0.15
0.1
0.05
0
-3
-2
-1
0
1
2
3

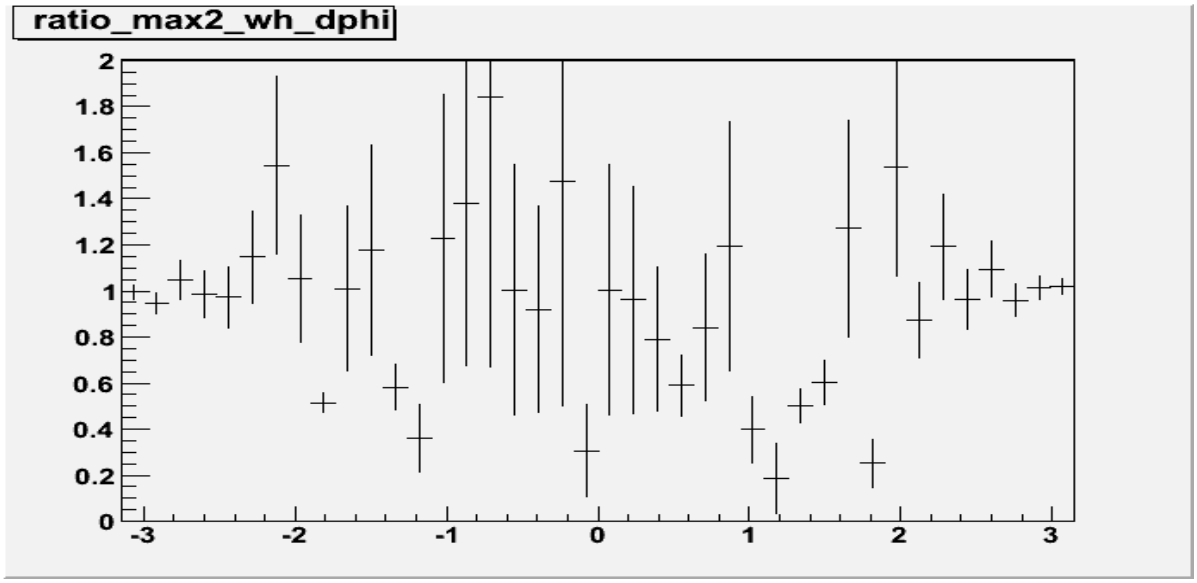
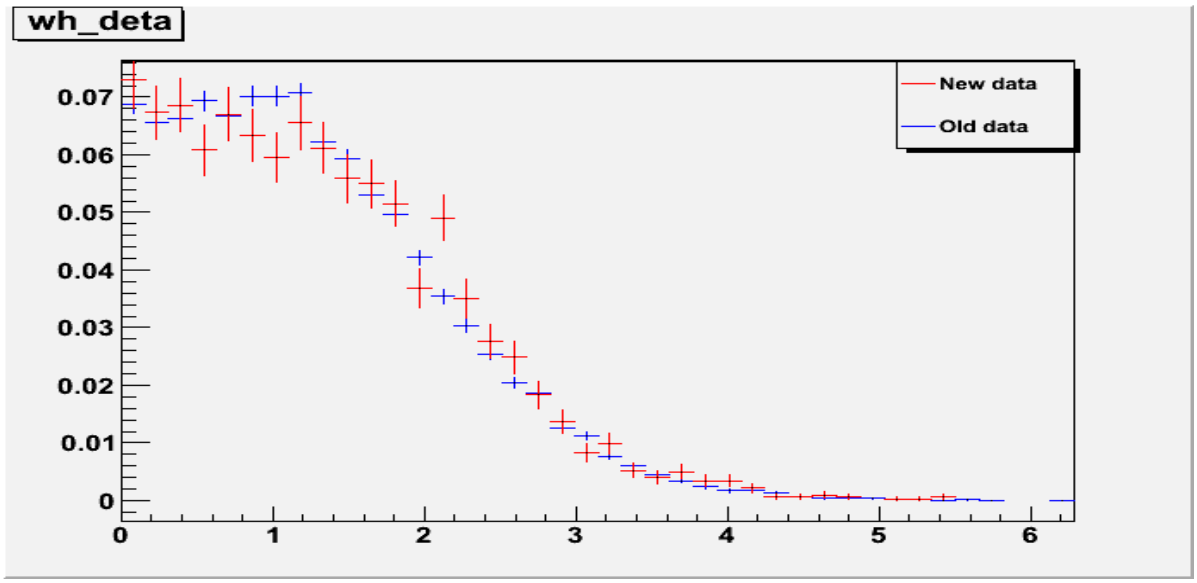

ratio_max2_wh_dphi
2
1.8
1.6
1.4
1.2
1
0.8
0.6
0.4
0.2
0
-3
-2
-1
0
1
2
3

Figure 1.38:


wh_deta
New data
Old data
0.07
0.06
0.05
0.04
0.03
0.02
0.01
0
0
1
2
3
4
5
6

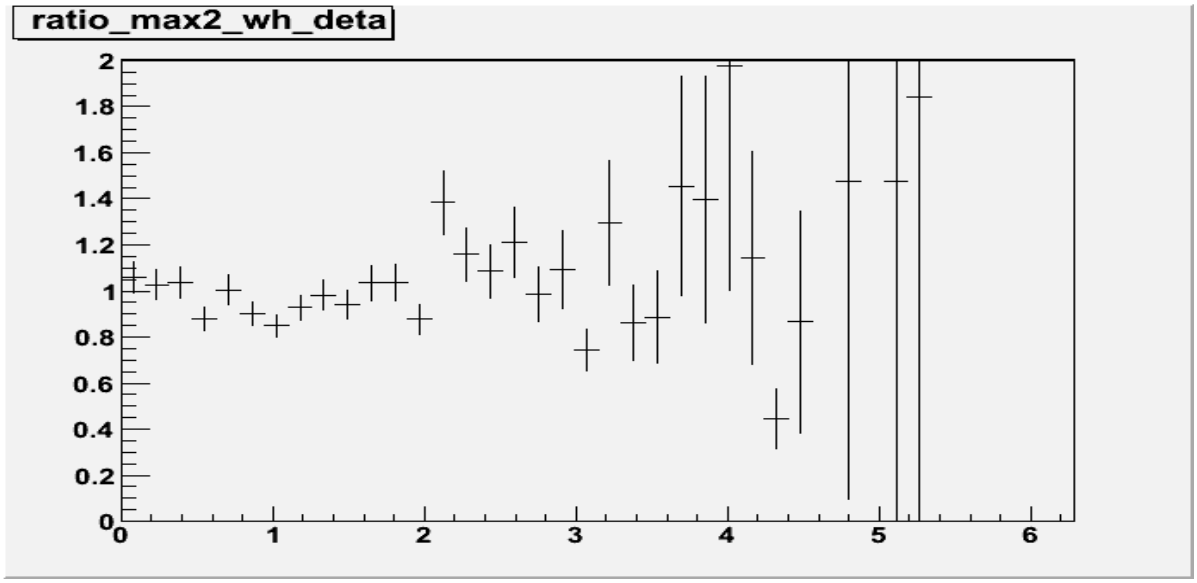
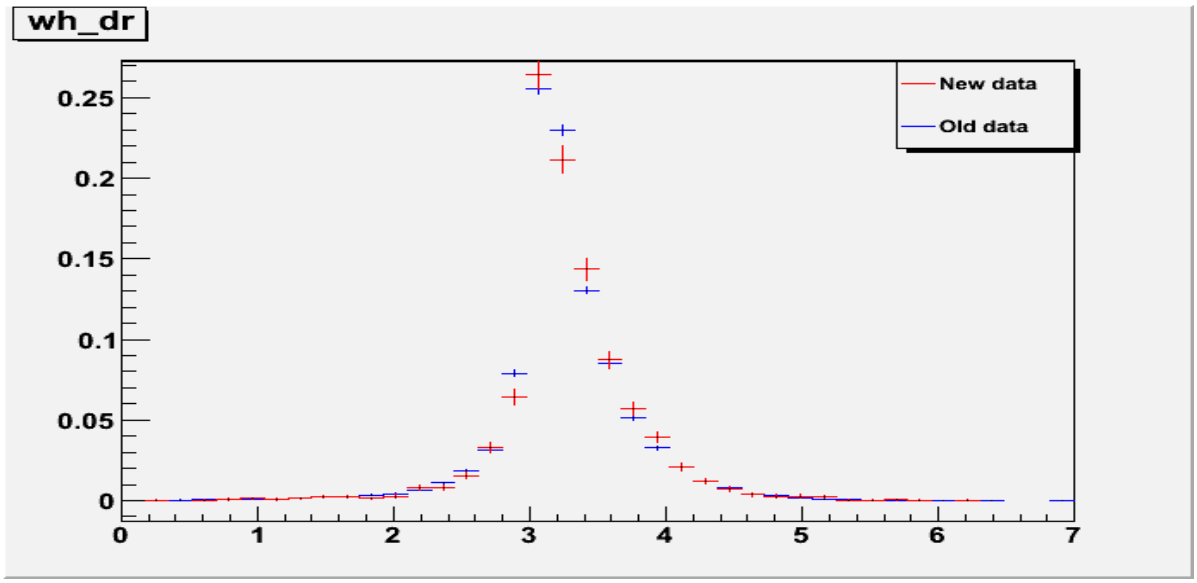

ratio_max2_wh_deta
2
1.8
1.6
1.4
1.2
1
0.8
0.6
0.4
0.2
0
0
1
2
3
4
5
6

Figure 1.39:


wh_dr
New data
Old data
0.25
0.2
0.15
0.1
0.05
0
0
1
2
3
4
5
6
7

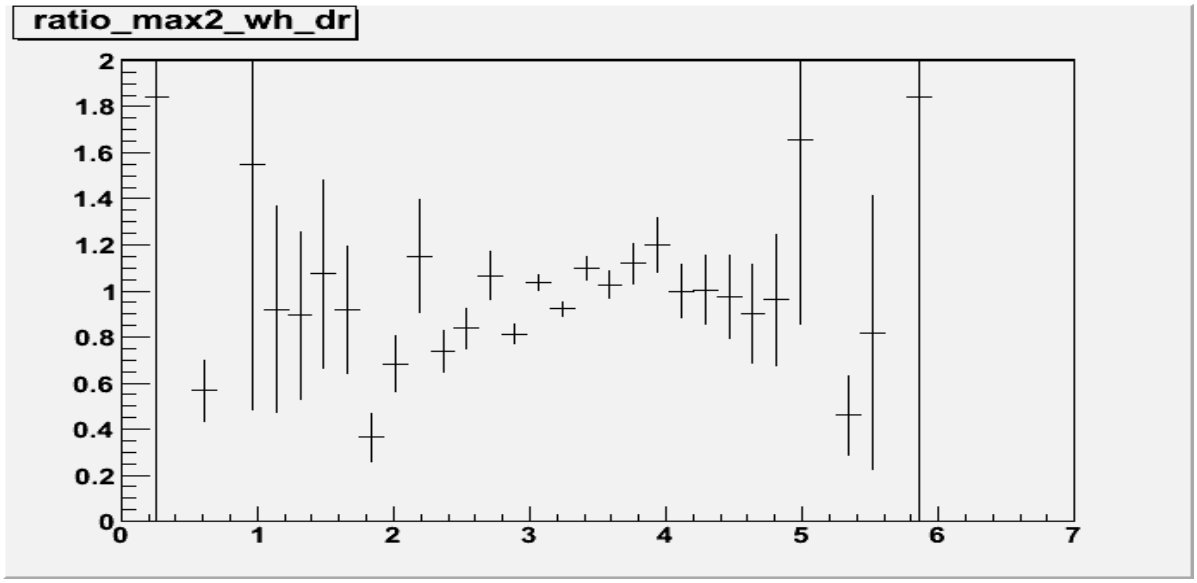
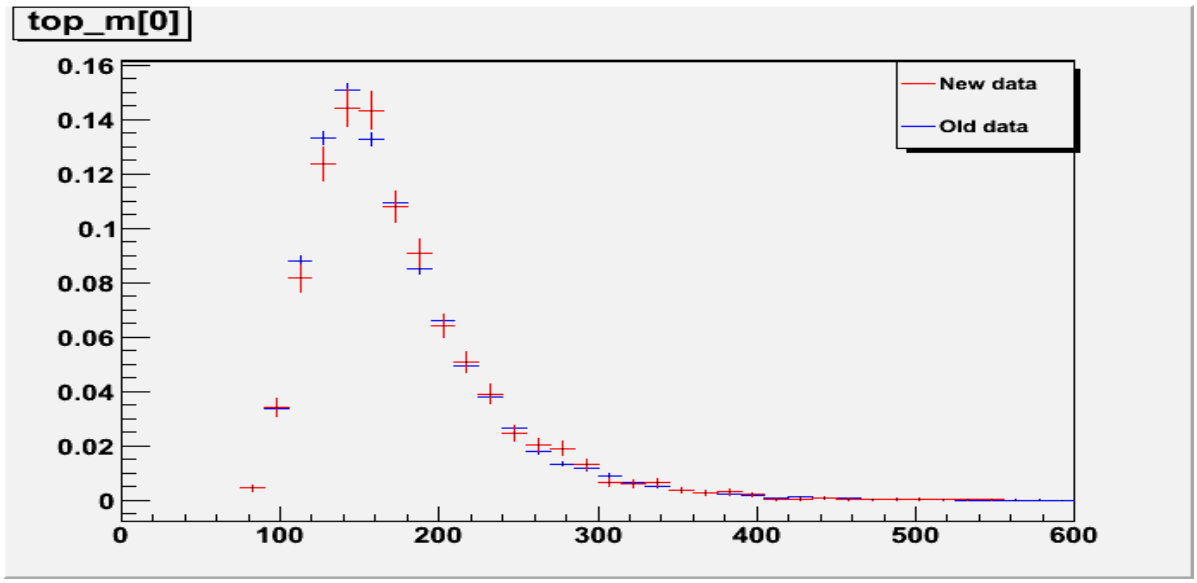

ratio_max2_wh_dr
2
1.8
1.6
1.4
1.2
1
0.8
0.6
0.4
0.2
0
0
1
2
3
4
5
6
7

Figure 1.40:


top_m[0]
New data
Old data
0.16
0.14
0.12
0.1
0.08
0.06
0.04
0.02
0
0
100
200
300
400
500
600

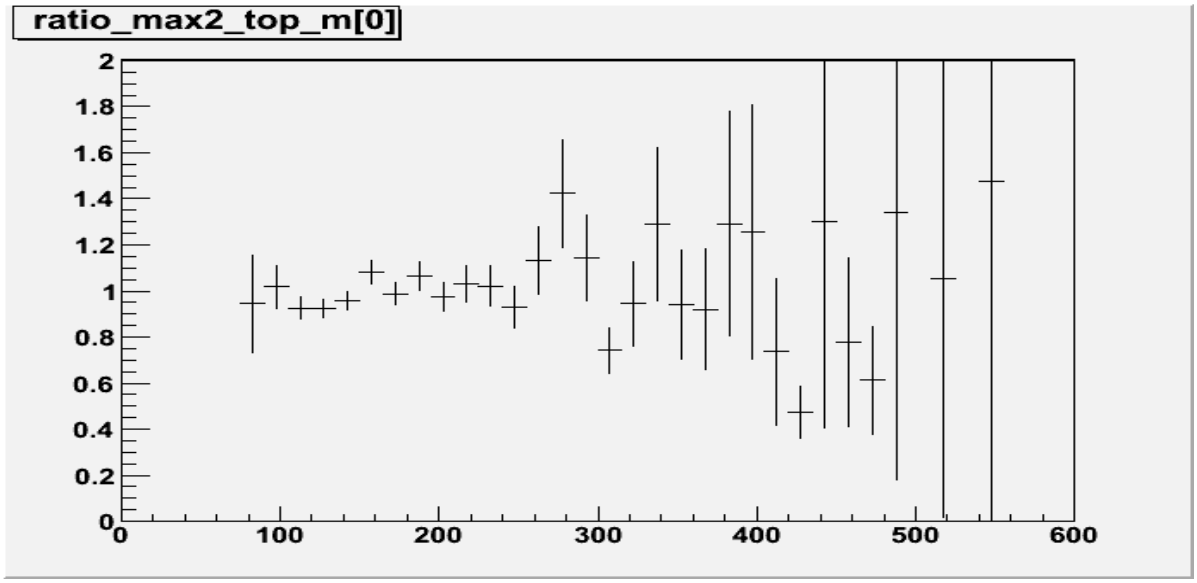
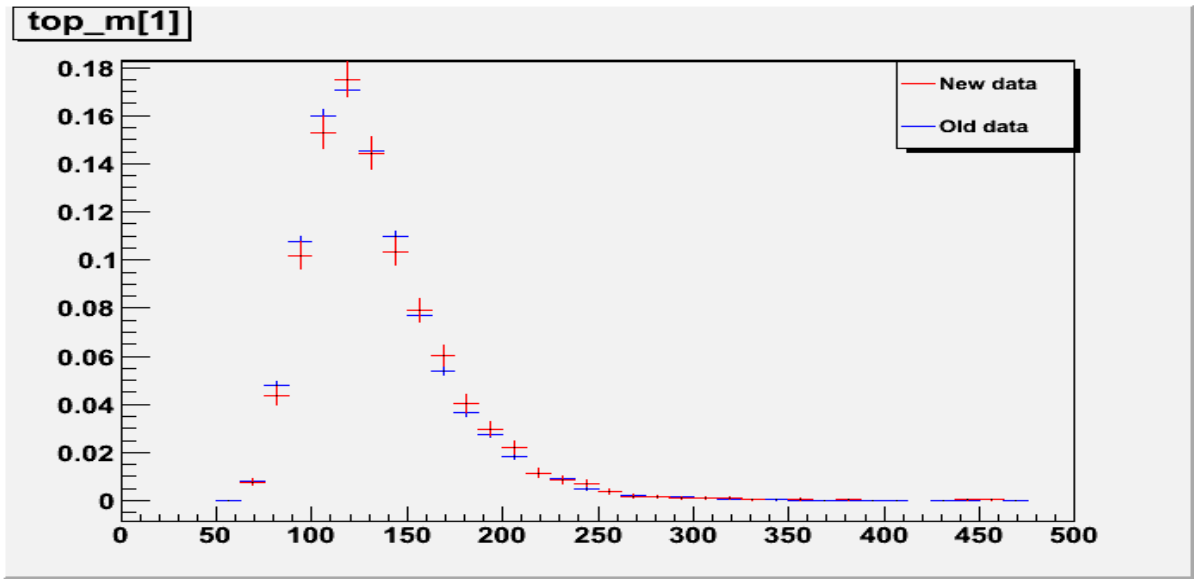

ratio_max2_top_m[0]
2
1.8
1.6
1.4
1.2
1
0.8
0.6
0.4
0.2
0
0
100
200
300
400
500
600

Figure 1.41:


top_m[1]
New data
Old data
0.18
0.16
0.14
0.12
0.1
0.08
0.06
0.04
0.02
0
0
50
100
150
200
250
300
350
400
450
500

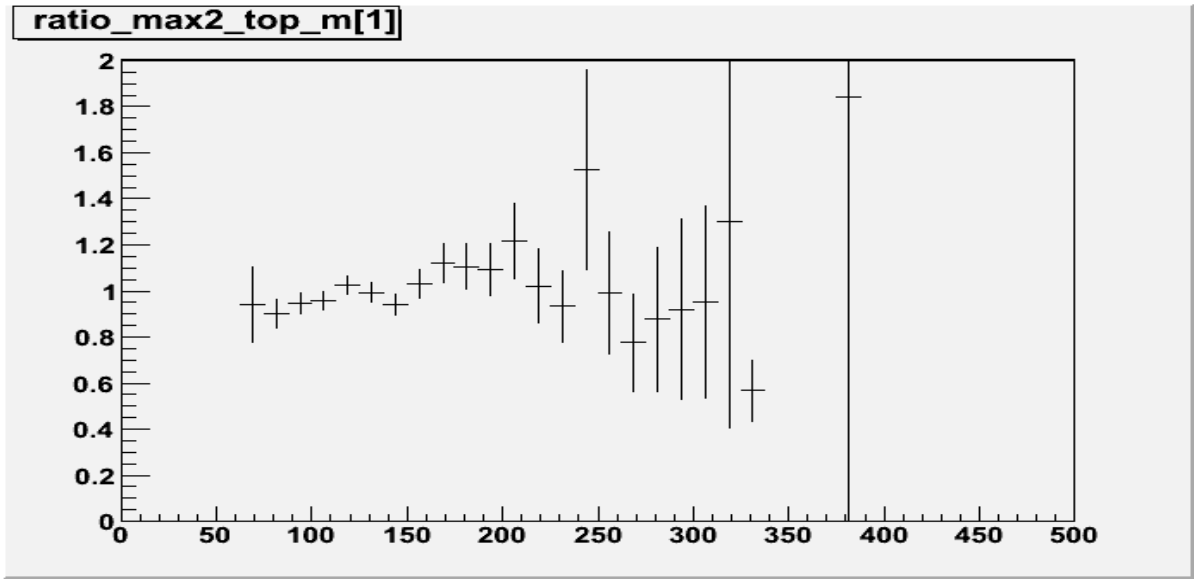
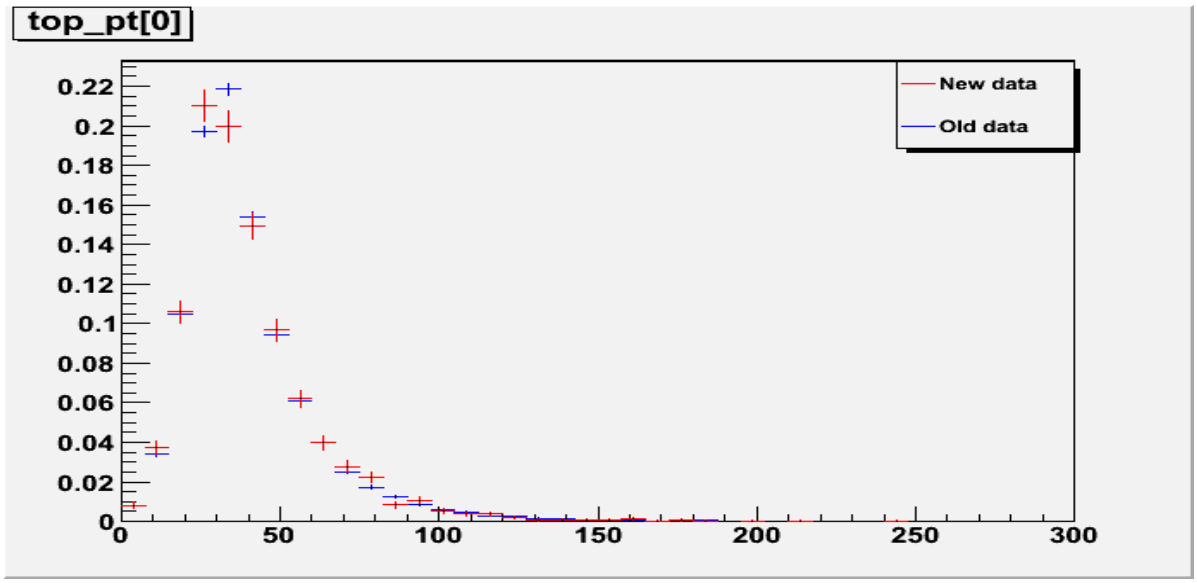

ratio_max2_top_m[1]
2
1.8
1.6
1.4
1.2
1
0.8
0.6
0.4
0.2
0
0
50
100
150
200
250
300
350
400
450
500

Figure 1.42:


top_pt[0]
New data
Old data
0.22
0.2
0.18
0.16
0.14
0.12
0.1
0.08
0.06
0.04
0.02
0
0
50
100
150
200
250
300

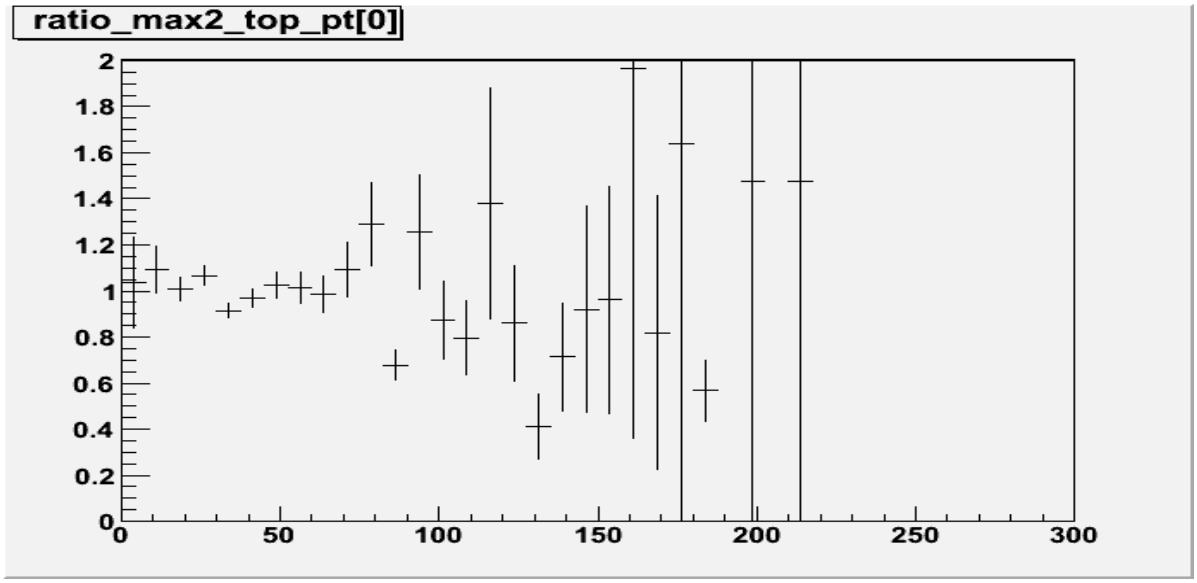
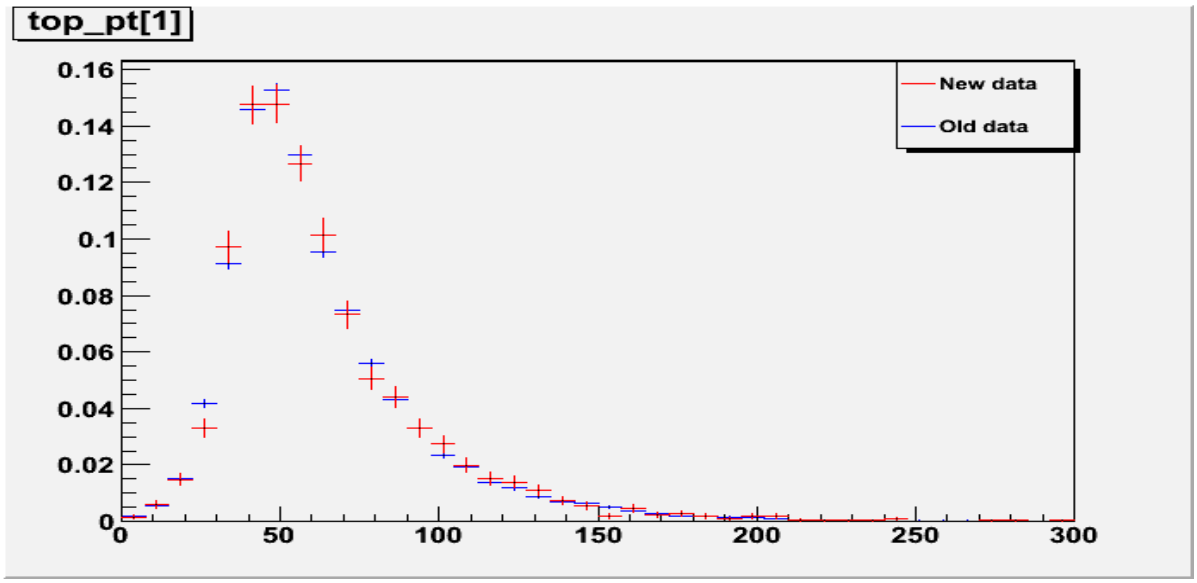

ratio_max2_top_pt[0]
2
1.8
1.6
1.4
1.2
1
0.8
0.6
0.4
0.2
0
0
50
100
150
200
250
300

Figure 1.43:


top_pt[1]
New data
Old data
0.16
0.14
0.12
0.1
0.08
0.06
0.04
0.02
0
0
50
100
150
200
250
300

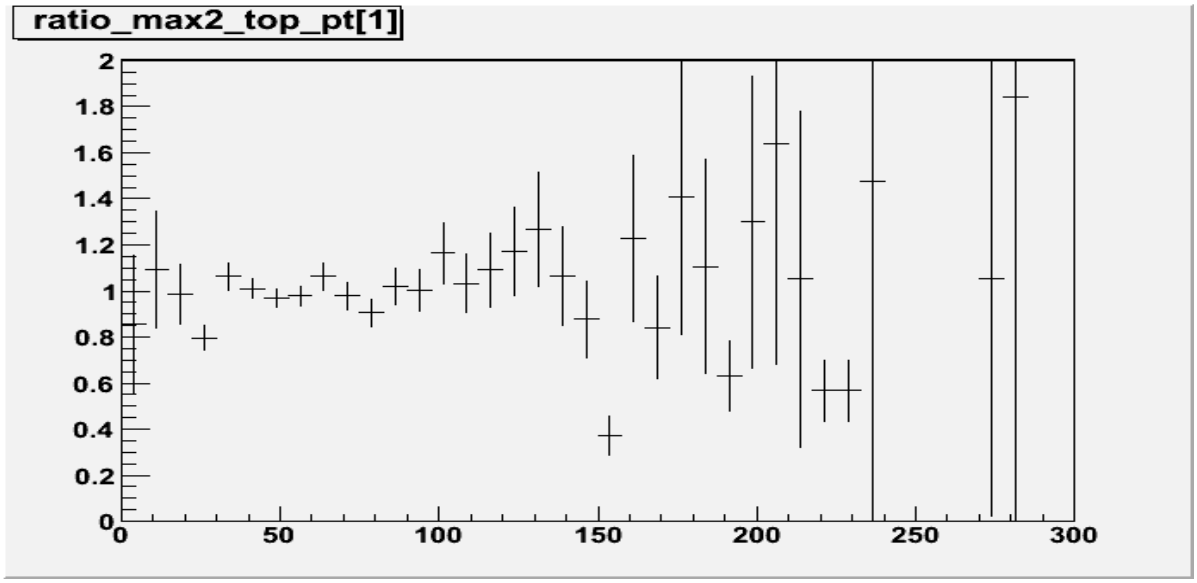
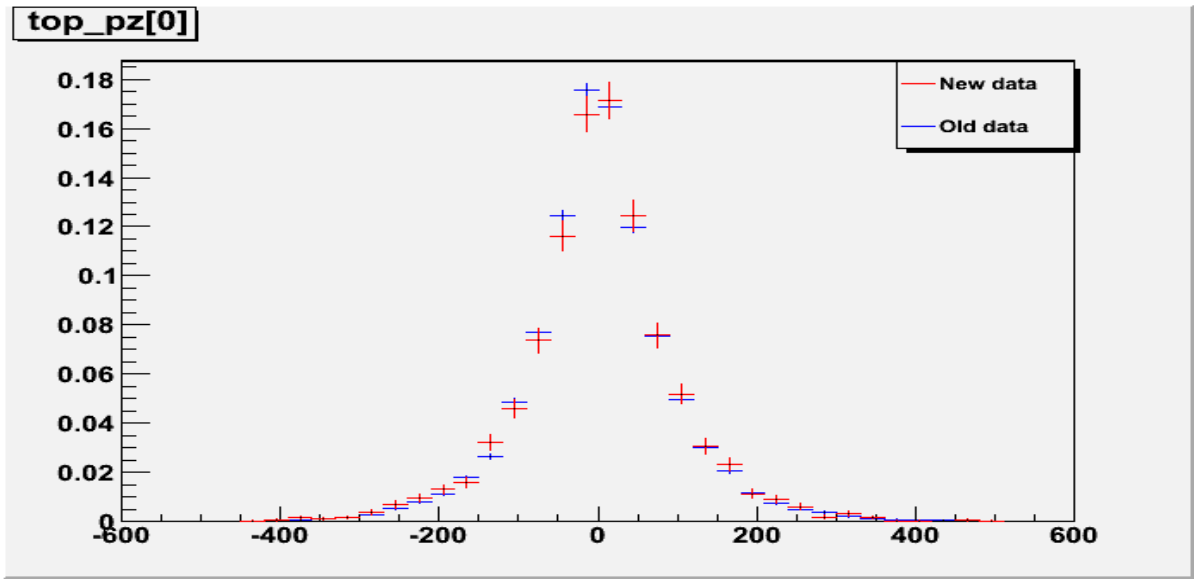

ratio_max2_top_pt[1]
2
1.8
1.6
1.4
1.2
1
0.8
0.6
0.4
0.2
0
0
50
100
150
200
250
300

Figure 1.44:


top_pz[0]
New data
Old data
0.18
0.16
0.14
0.12
0.1
0.08
0.06
0.04
0.02
0
-600
-400
-200
0
200
400
600

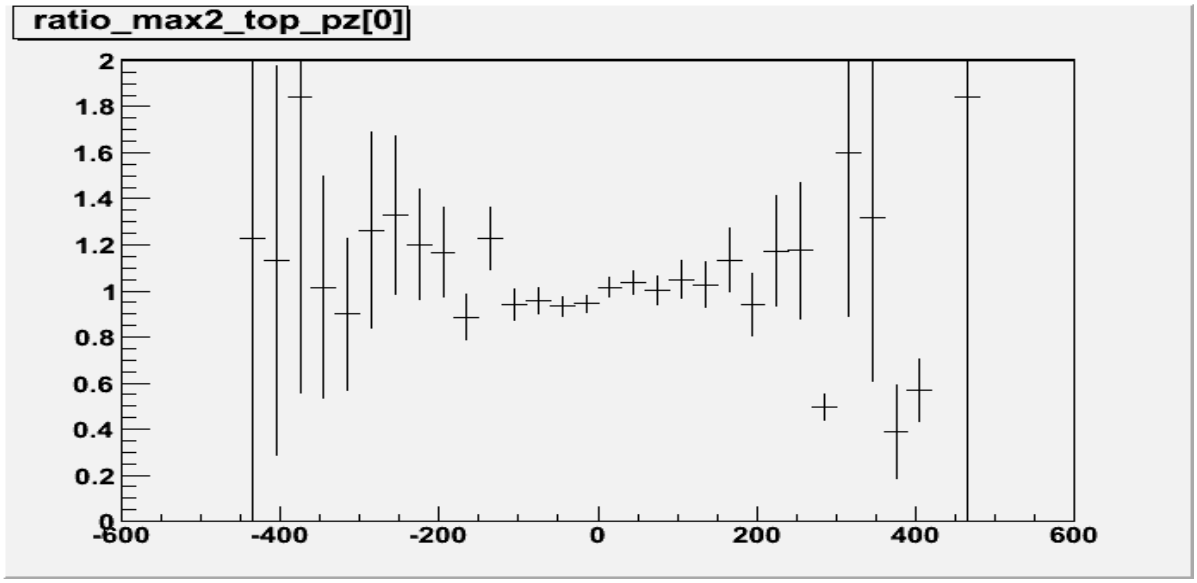
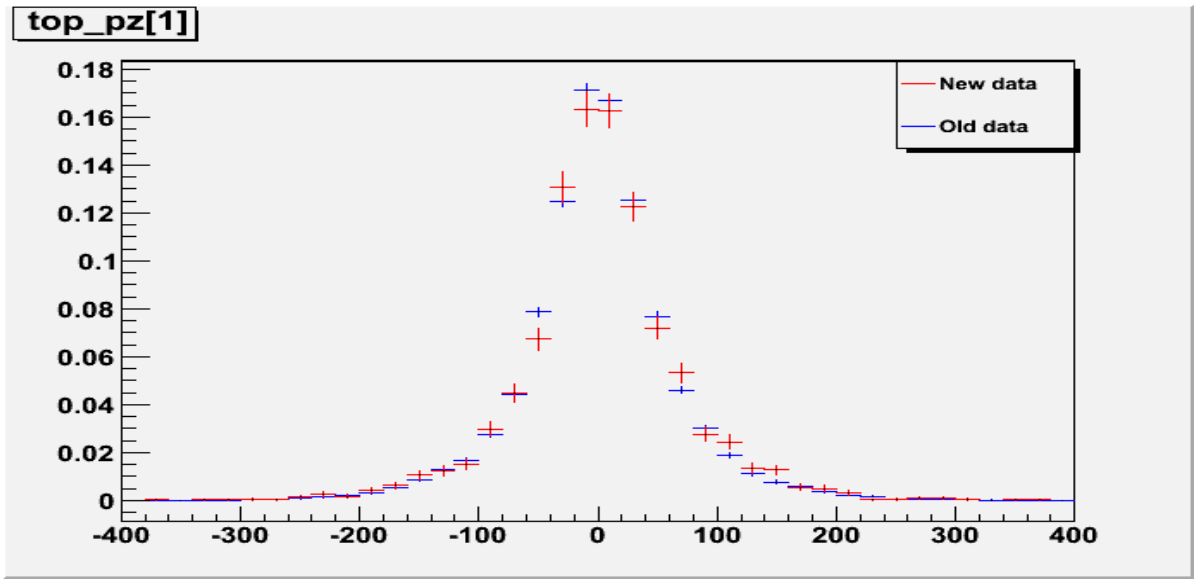

ratio_max2_top_pz[0]
2
1.8
1.6
1.4
1.2
1
0.8
0.6
0.4
0.2
0
-600
-400
-200
0
200
400
600

Figure 1.45:


top_pz[1]
New data
Old data
0.18
0.16
0.14
0.12
0.1
0.08
0.06
0.04
0.02
0
-400
-300
-200
-100
0
100
200
300
400

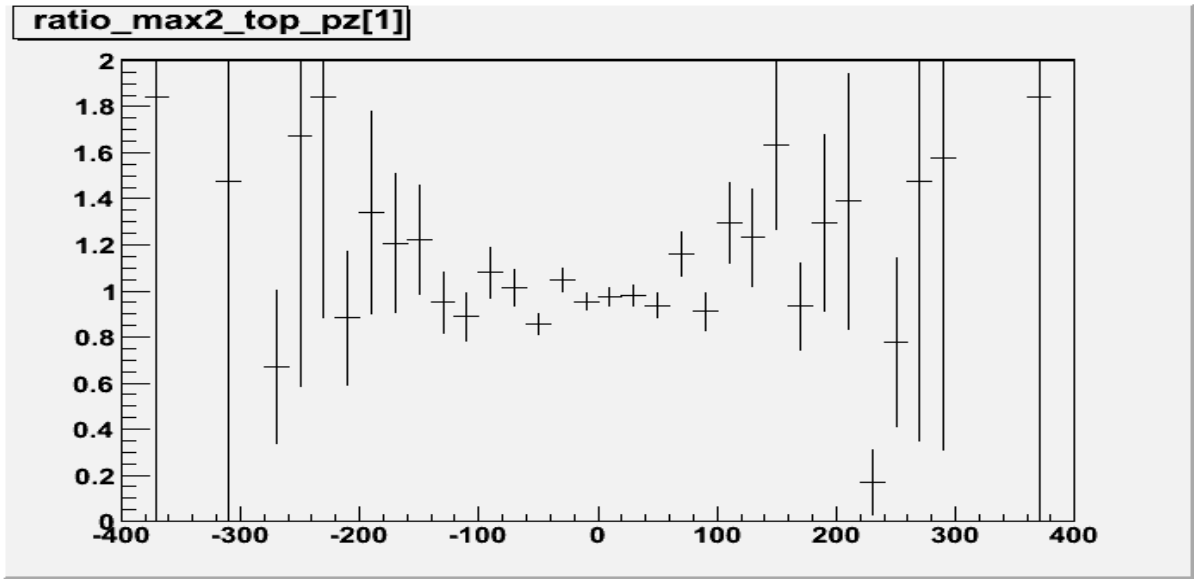
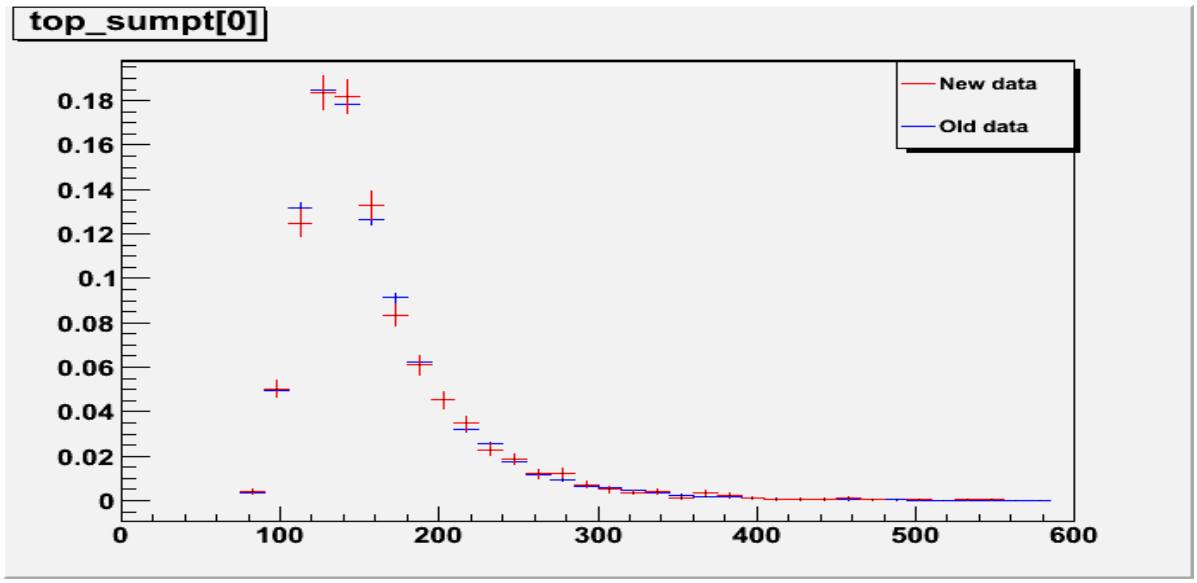

ratio_max2_top_pz[1]
2
1.8
1.6
1.4
1.2
1
0.8
0.6
0.4
0.2
0
-400
-300
-200
-100
0
100
200
300
400

Figure 1.46:


top_sumpt[0]
New data
Old data
0.18
0.16
0.14
0.12
0.1
0.08
0.06
0.04
0.02
0
0
100
200
300
400
500
600

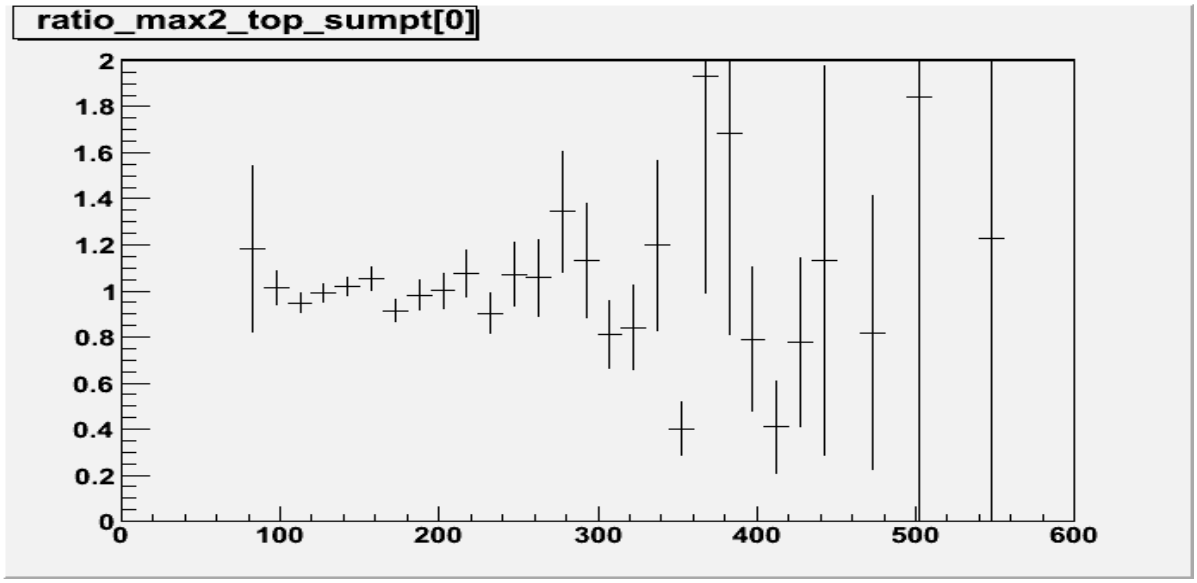
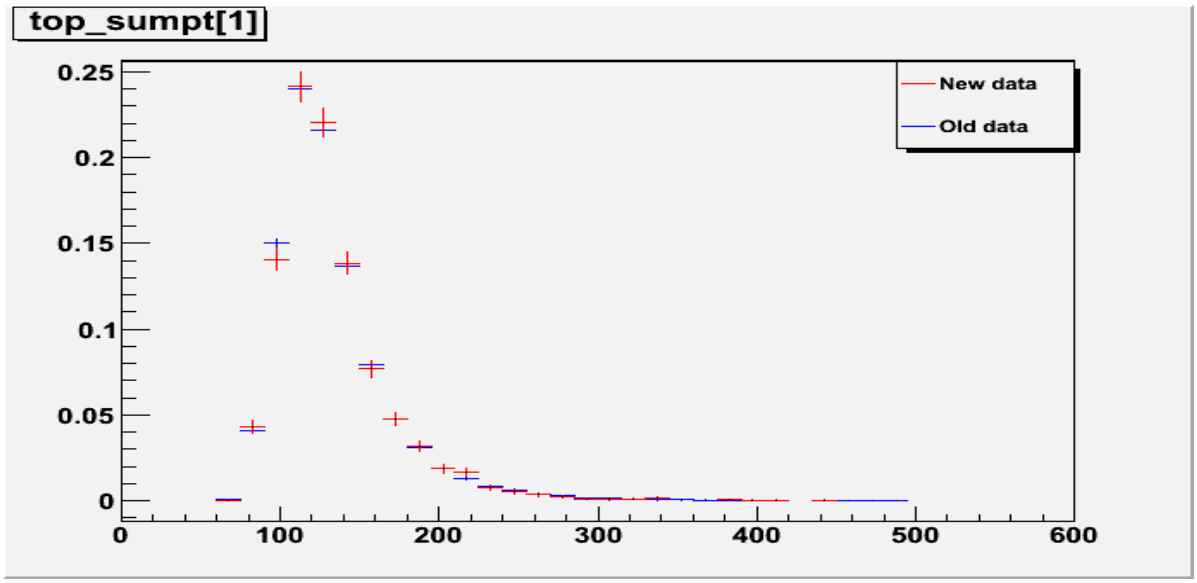

ratio_max2_top_sumpt[0]
2
1.8
1.6
1.4
1.2
1
0.8
0.6
0.4
0.2
0
0
100
200
300
400
500
600

Figure 1.47:


top_sumpt[1]
New data
Old data
0.25
0.2
0.15
0.1
0.05
0
0
100
200
300
400
500
600

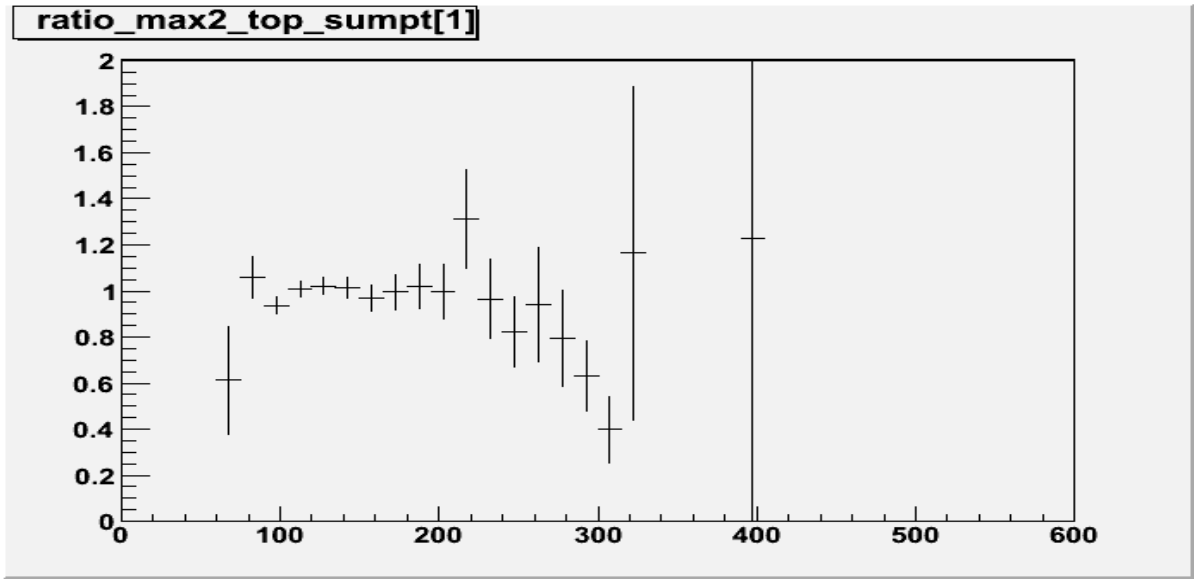
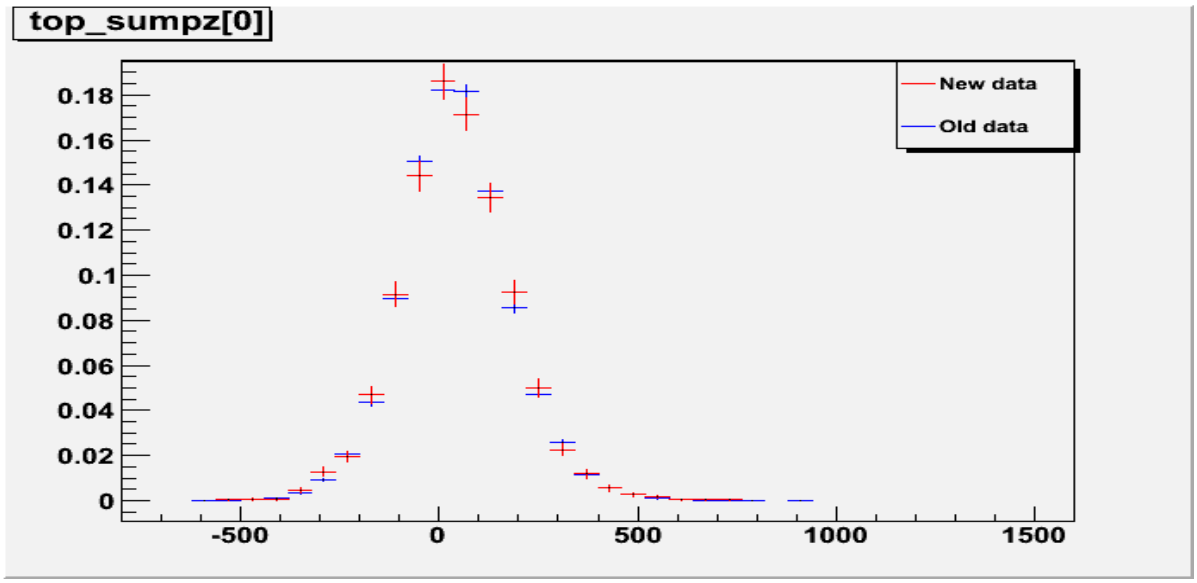

ratio_max2_top_sumpt[1]
2
1.8
1.6
1.4
1.2
1
0.8
0.6
0.4
0.2
0
0
100
200
300
400
500
600

Figure 1.48:


top_sumpz[0]
New data
Old data
0.18
0.16
0.14
0.12
0.1
0.08
0.06
0.04
0.02
0
-500
0
500
1000
1500

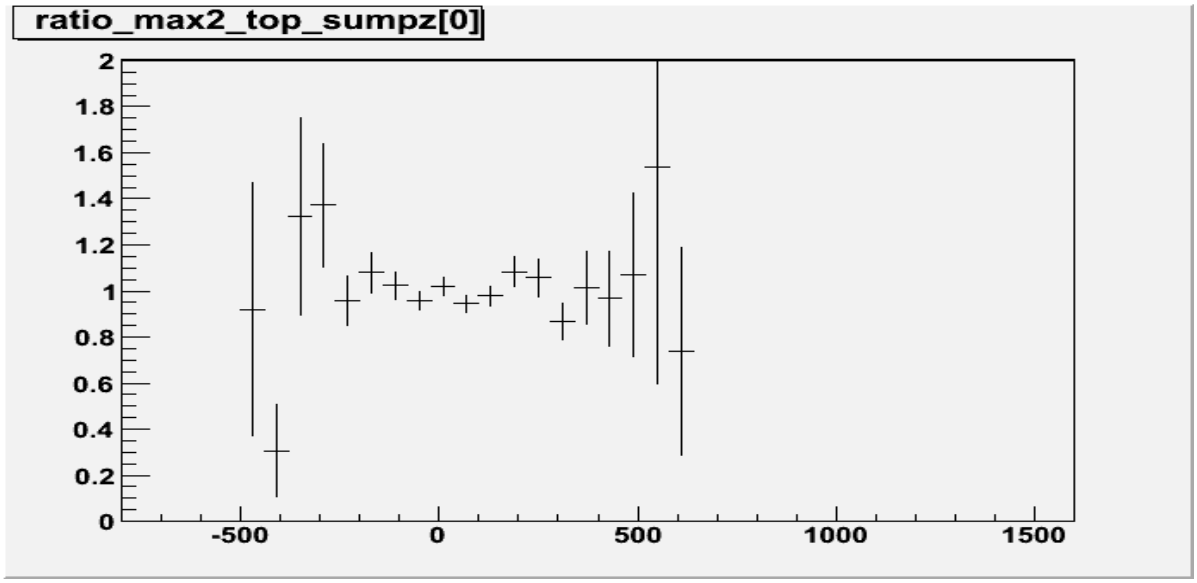
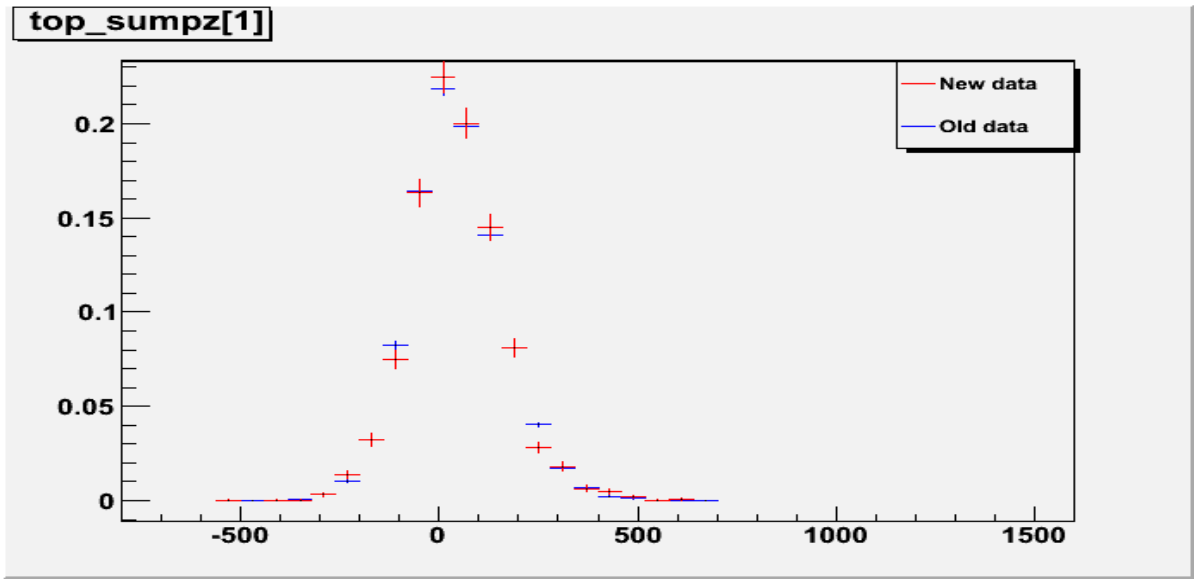

ratio_max2_top_sumpz[0]
2
1.8
1.6
1.4
1.2
1
0.8
0.6
0.4
0.2
0
-500
0
500
1000
1500

Figure 1.49:


top_sumpz[1]
New data
Old data
0.2
0.15
0.1
0.05
0
-500
0
500
1000
1500

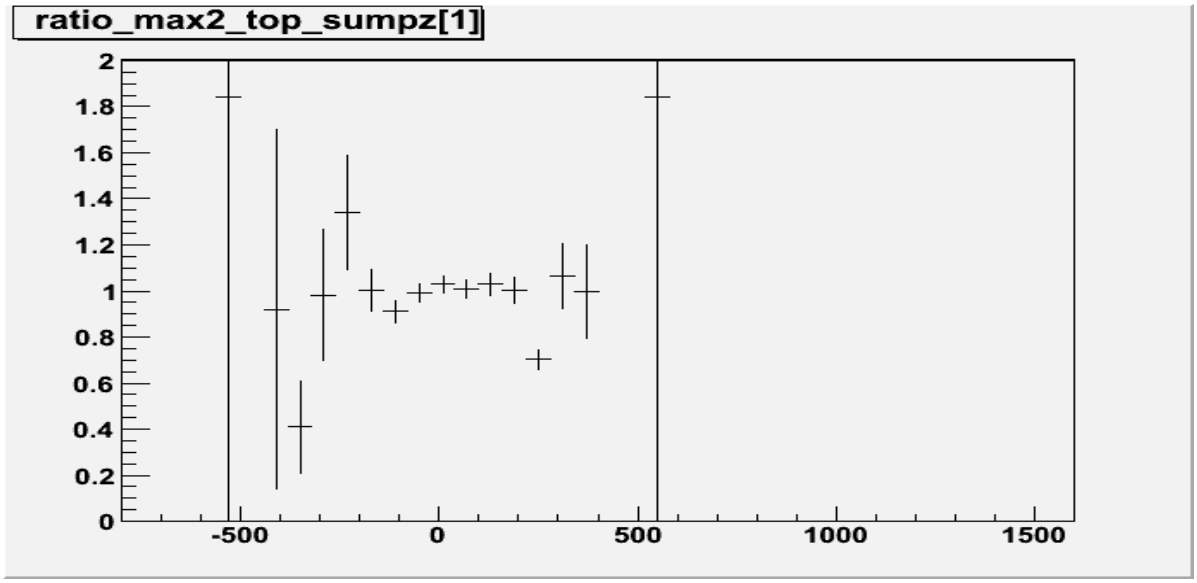
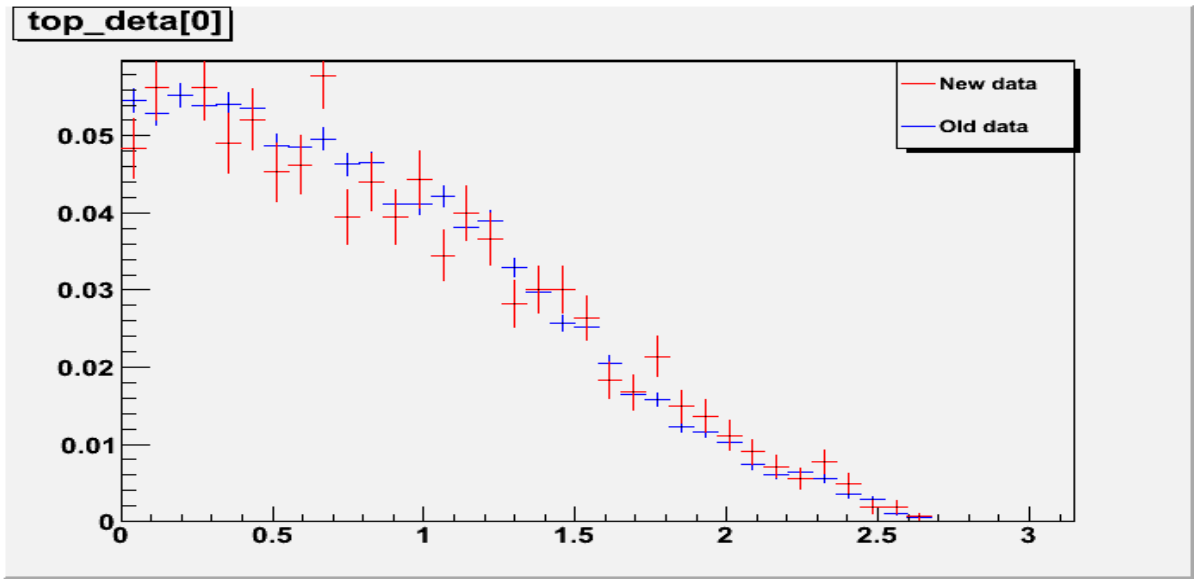

ratio_max2_top_sumpz[1]
2
1.8
1.6
1.4
1.2
1
0.8
0.6
0.4
0.2
0
-500
0
500
1000
1500

Figure 1.50:


top_deta[0]
New data
Old data
0.05
0.04
0.03
0.02
0.01
0
0
0.5
1
1.5
2
2.5
3

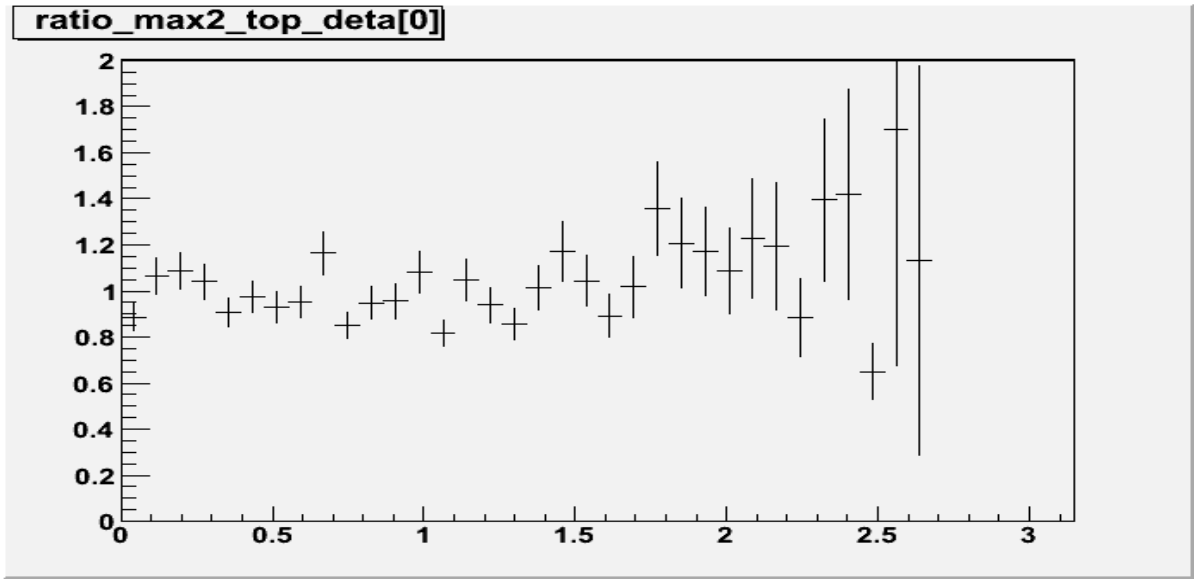
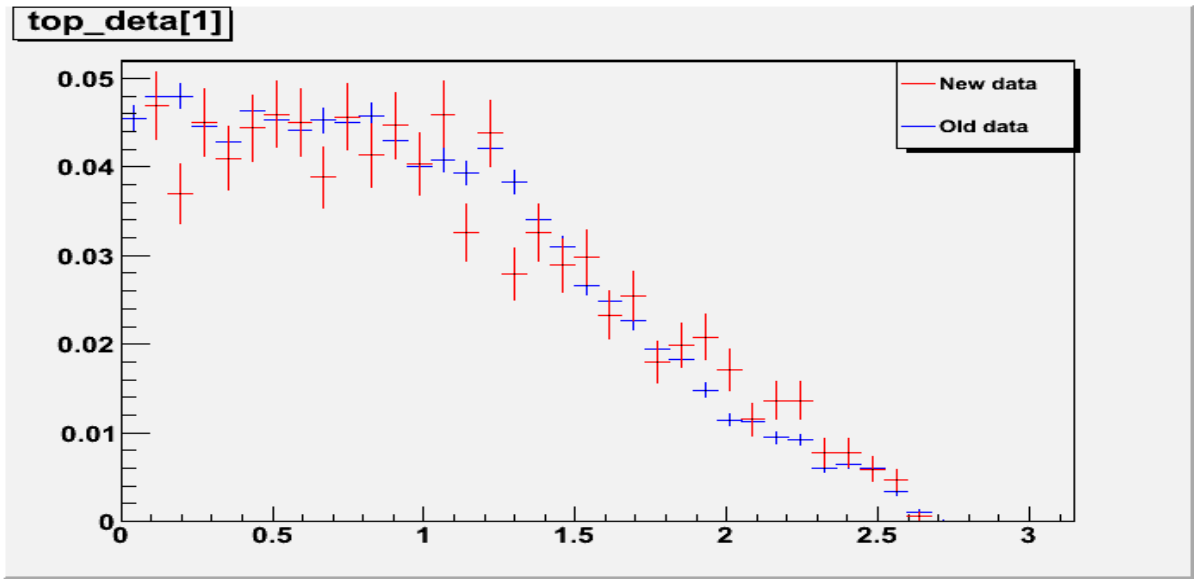

ratio_max2_top_deta[0]
2
1.8
1.6
1.4
1.2
1
0.8
0.6
0.4
0.2
0
0
0.5
1
1.5
2
2.5
3

Figure 1.51:


top_deta[1]
New data
Old data
0.05
0.04
0.03
0.02
0.01
0
0
0.5
1
1.5
2
2.5
3

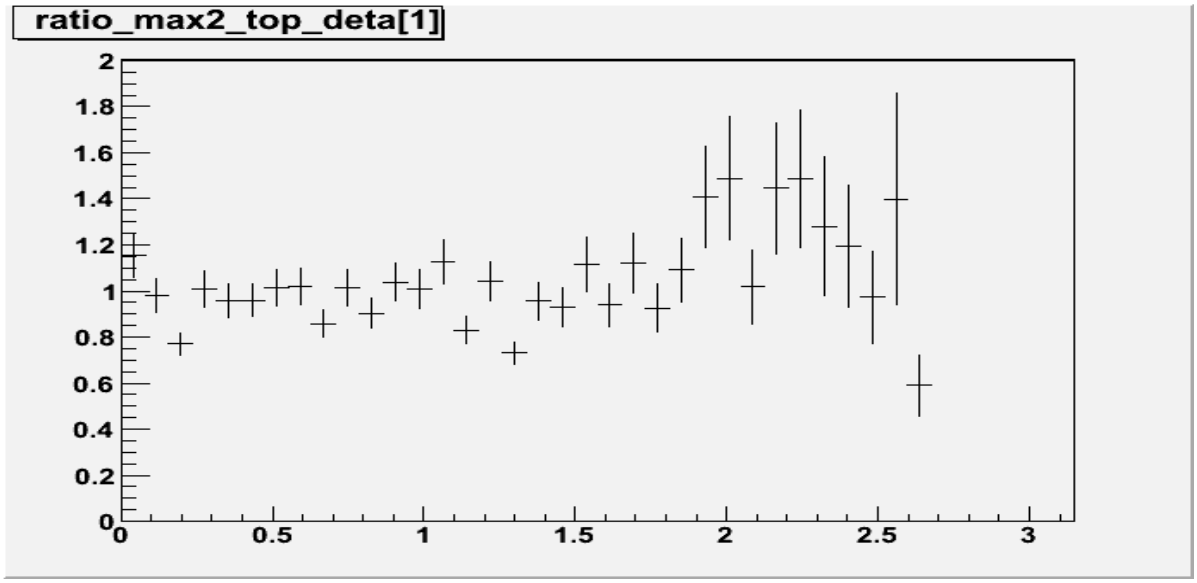
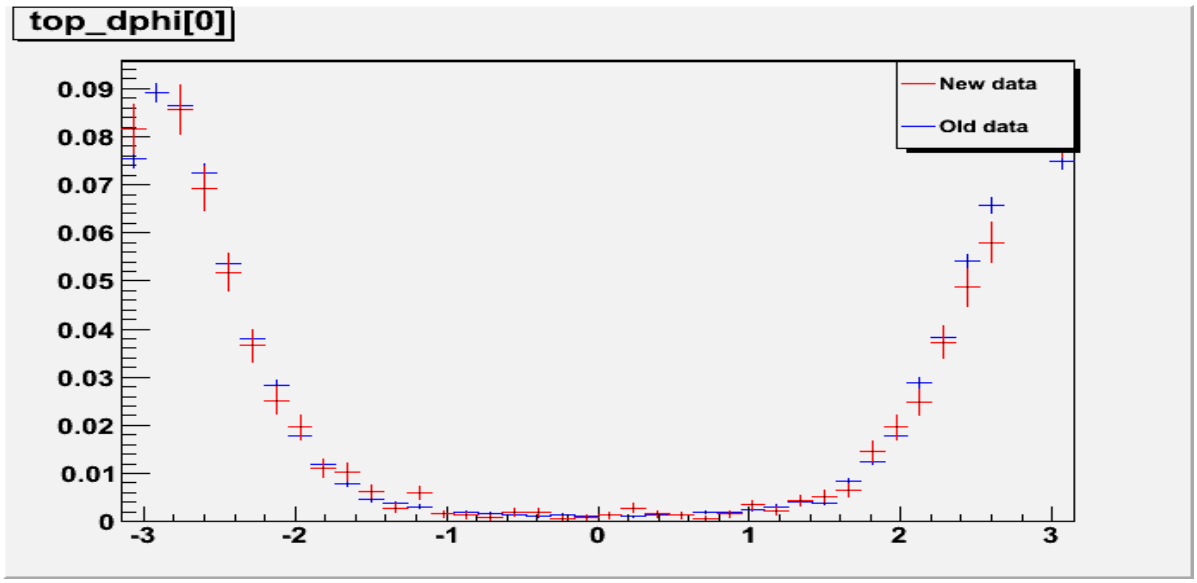

ratio_max2_top_deta[1]
2
1.8
1.6
1.4
1.2
1
0.8
0.6
0.4
0.2
0
0
0.5
1
1.5
2
2.5
3

Figure 1.52:


top_dphi[0]
New data
Old data
0.09
0.08
0.07
0.06
0.05
0.04
0.03
0.02
0.01
0
-3
-2
-1
0
1
2
3

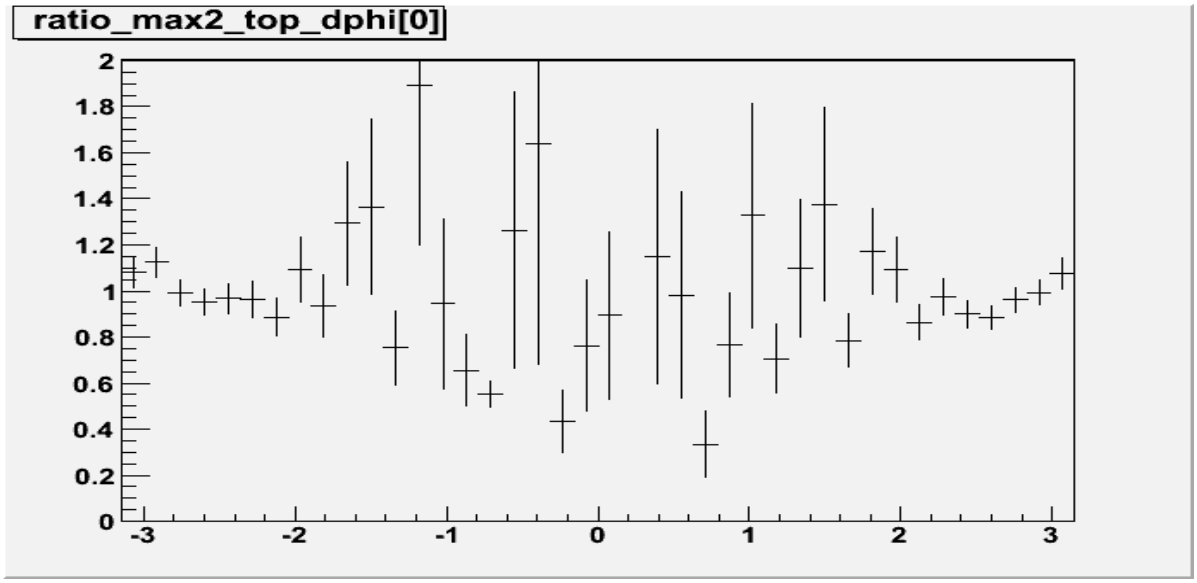
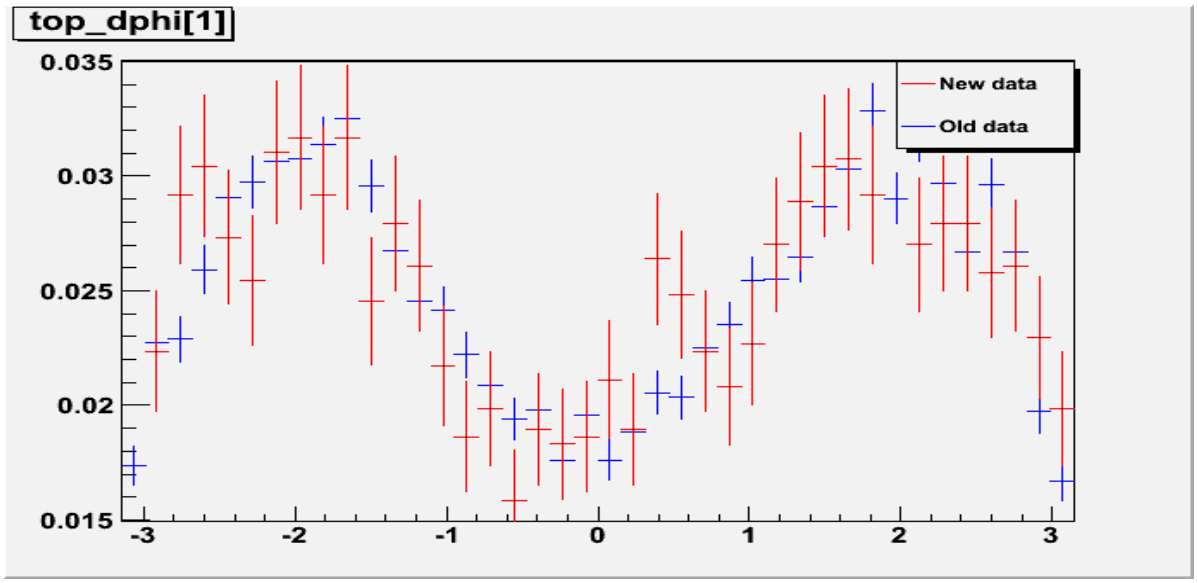

ratio_max2_top_dphi[0]
2
1.8
1.6
1.4
1.2
1
0.8
0.6
0.4
0.2
0
-3
-2
-1
0
1
2
3

Figure 1.53:


top_dphi[1]
0.035
0.03
0.025
0.02
0.015
-3
-2
-1
0
1
2
3
New data
Old data

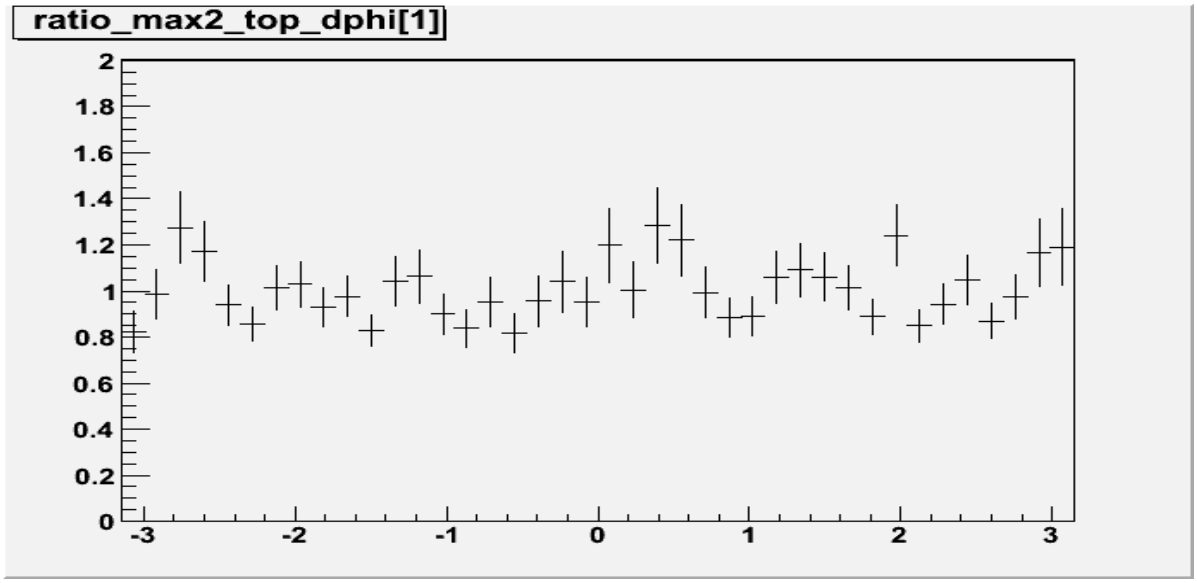
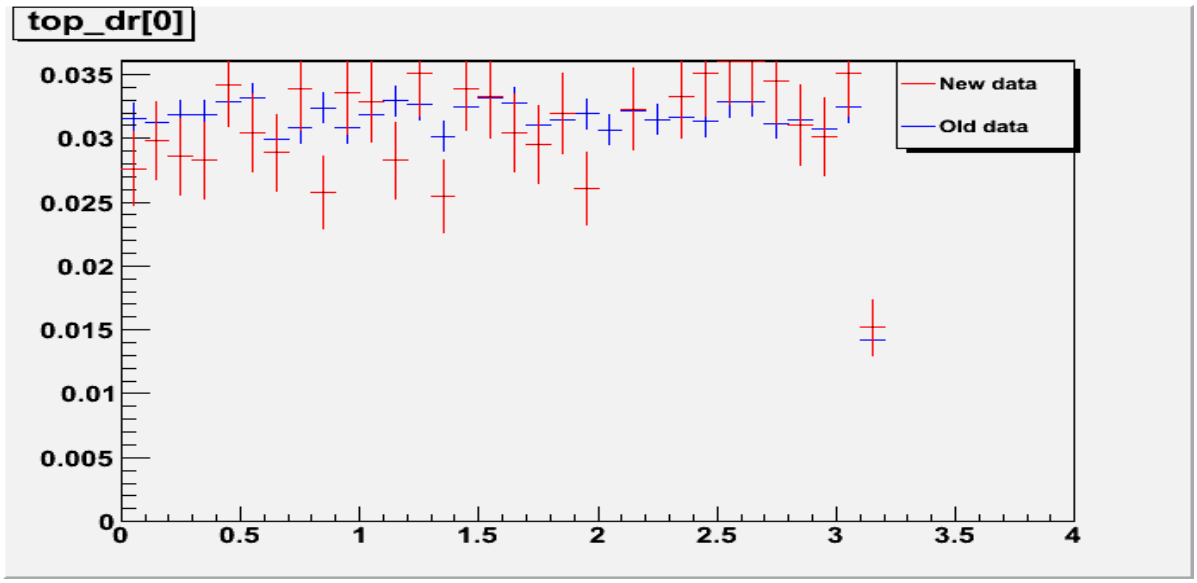

ratio_max2_top_dphi[1]
2
1.8
1.6
1.4
1.2
1
0.8
0.6
0.4
0.2
0
-3
-2
-1
0
1
2
3

Figure 1.54:


top_dr[0]
New data
Old data
0.035
0.03
0.025
0.02
0.015
0.01
0.005
0
0
0.5
1
1.5
2
2.5
3
3.5
4

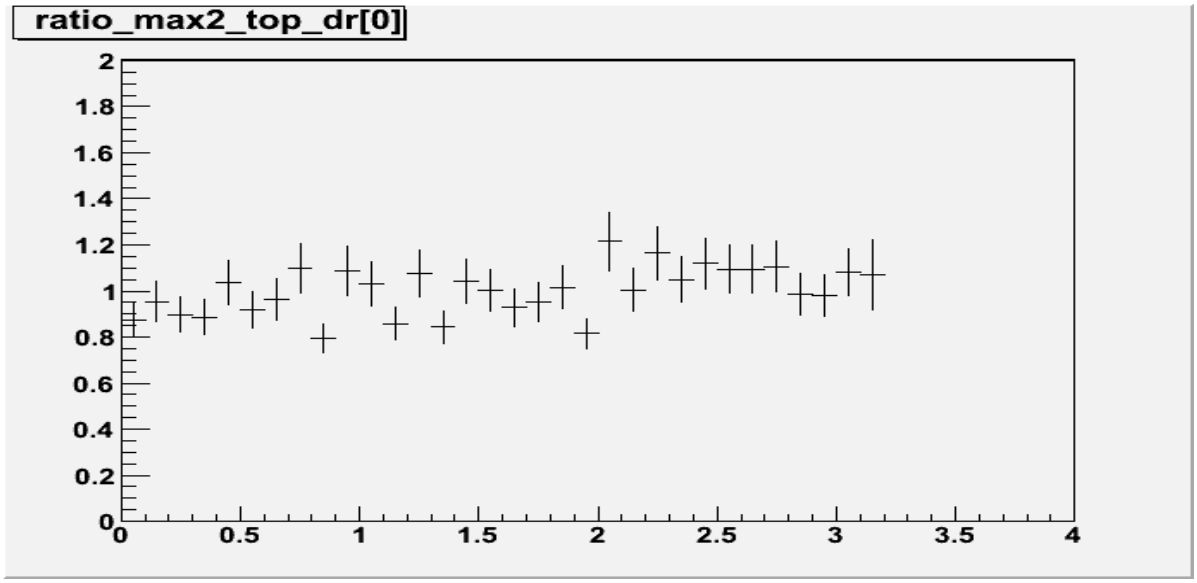
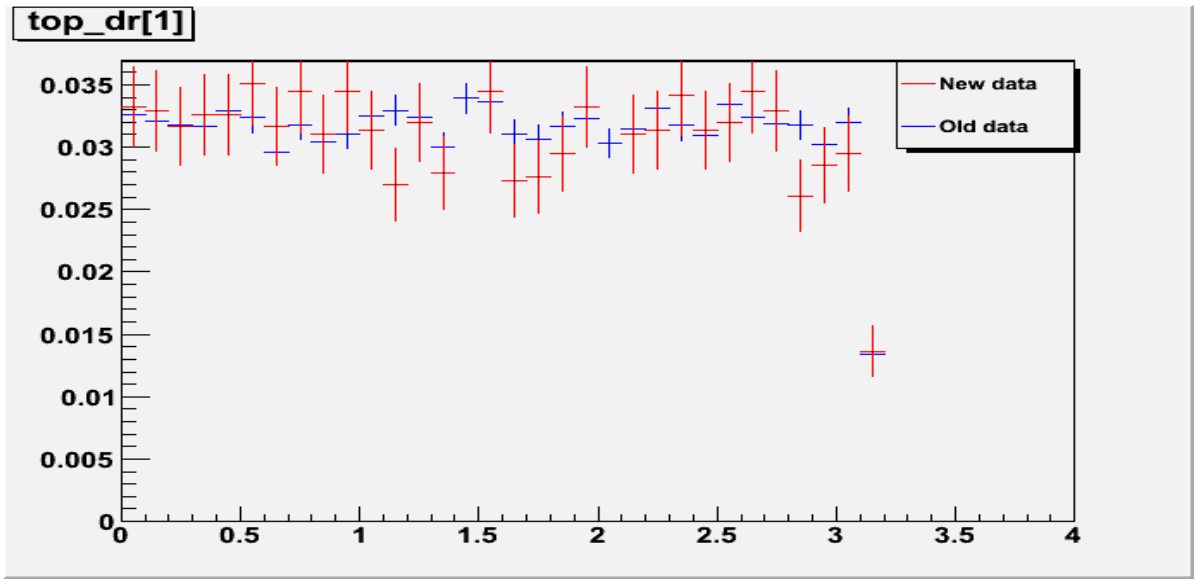

ratio_max2_top_dr[0]
2
1.8
1.6
1.4
1.2
1
0.8
0.6
0.4
0.2
0
0
0.5
1
1.5
2
2.5
3
3.5
4

Figure 1.55:


top_dr[1]
New data
Old data
0.035
0.03
0.025
0.02
0.015
0.01
0.005
0
0
0.5
1
1.5
2
2.5
3
3.5
4

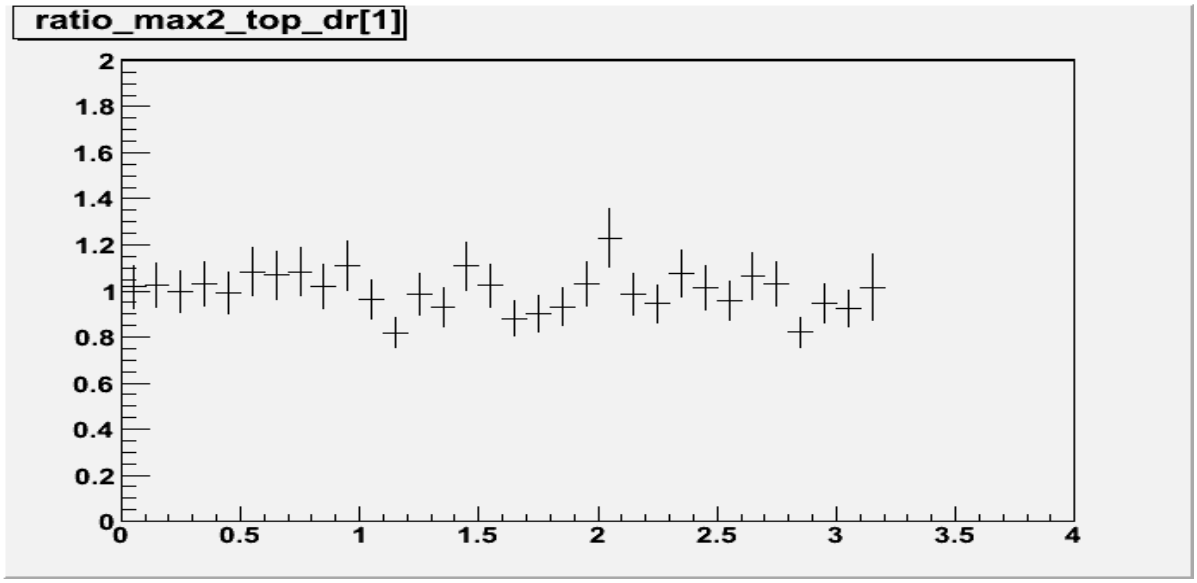
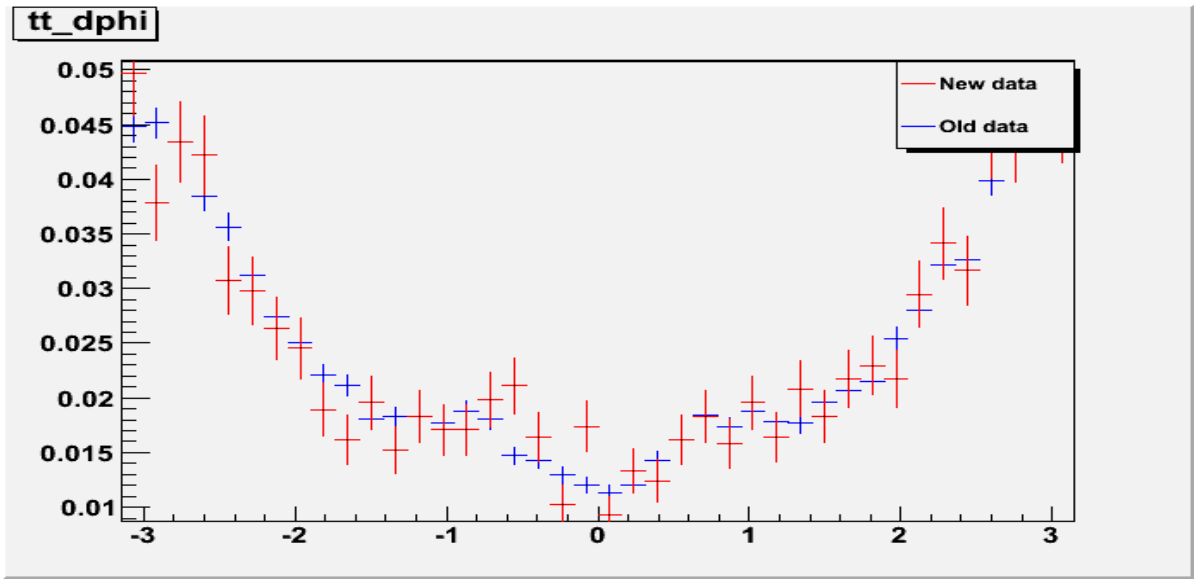

ratio_max2_top_dr[1]
2
1.8
1.6
1.4
1.2
1
0.8
0.6
0.4
0.2
0
0
0.5
1
1.5
2
2.5
3
3.5
4

Figure 1.56:


tt_dphi
New data
Old data
0.05
0.045
0.04
0.035
0.03
0.025
0.02
0.015
0.01
-3
-2
-1
0
1
2
3

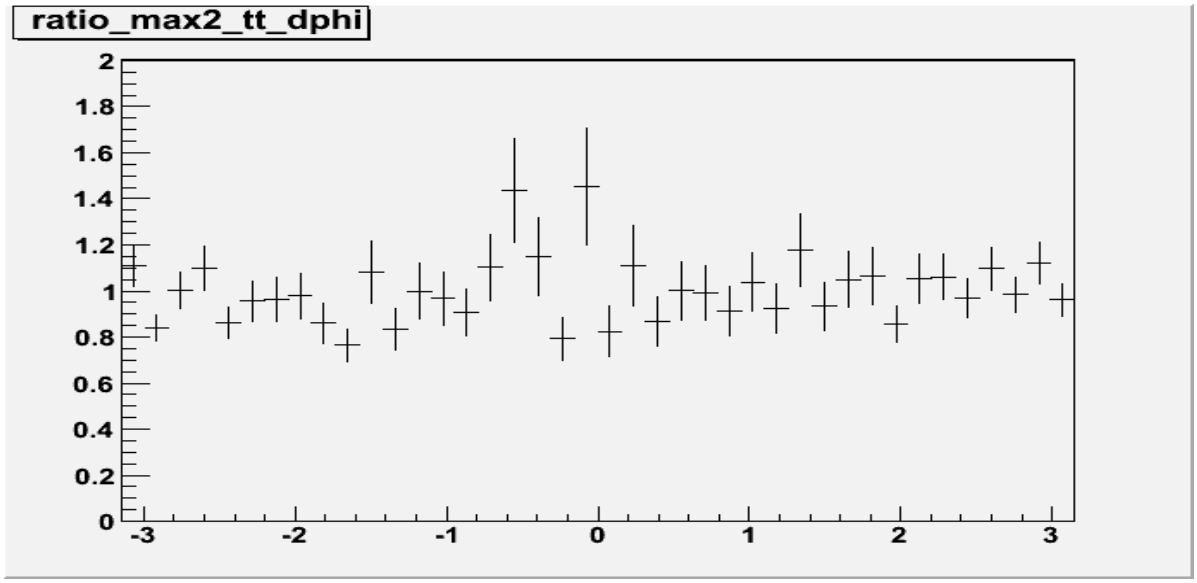
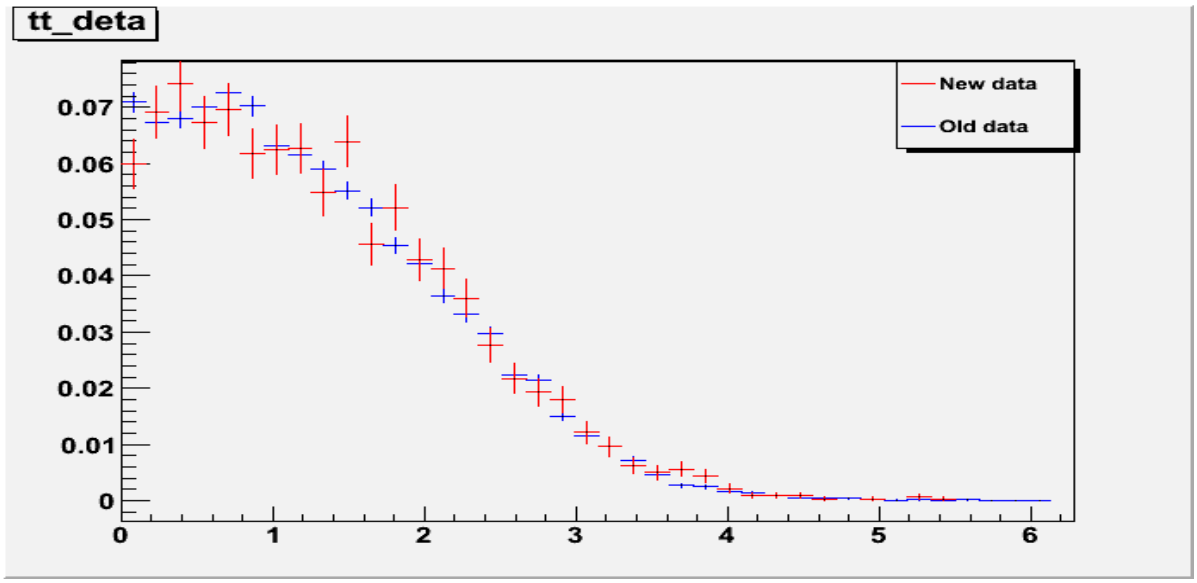

ratio_max2_tt_dphi
2
1.8
1.6
1.4
1.2
1
0.8
0.6
0.4
0.2
0
-3
-2
-1
0
1
2
3

Figure 1.57:


tt_deta
New data
Old data
0.07
0.06
0.05
0.04
0.03
0.02
0.01
0
0
1
2
3
4
5
6

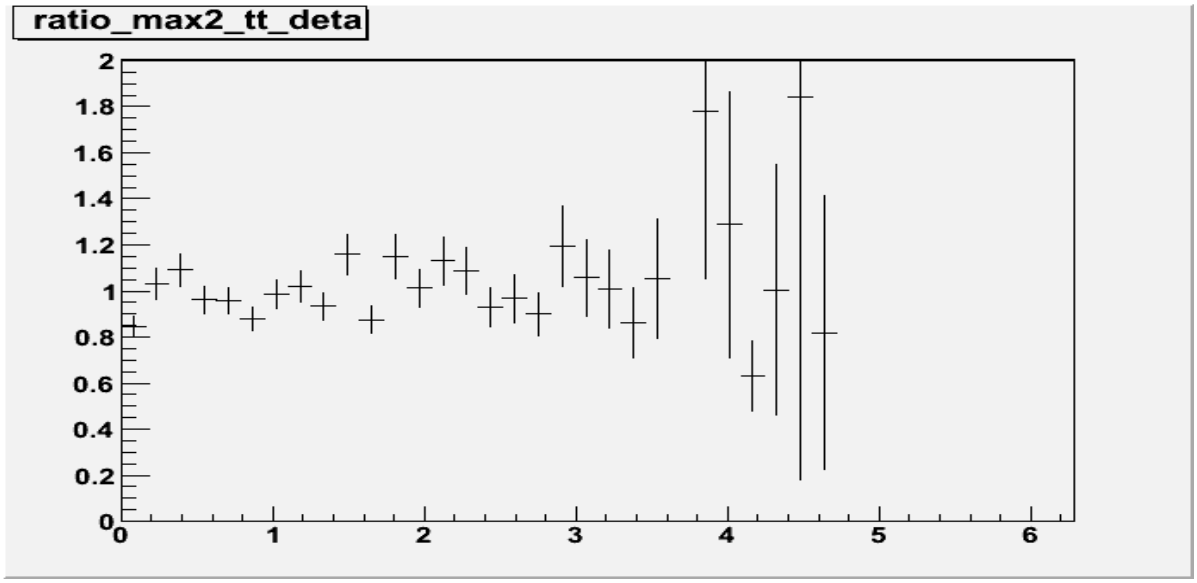
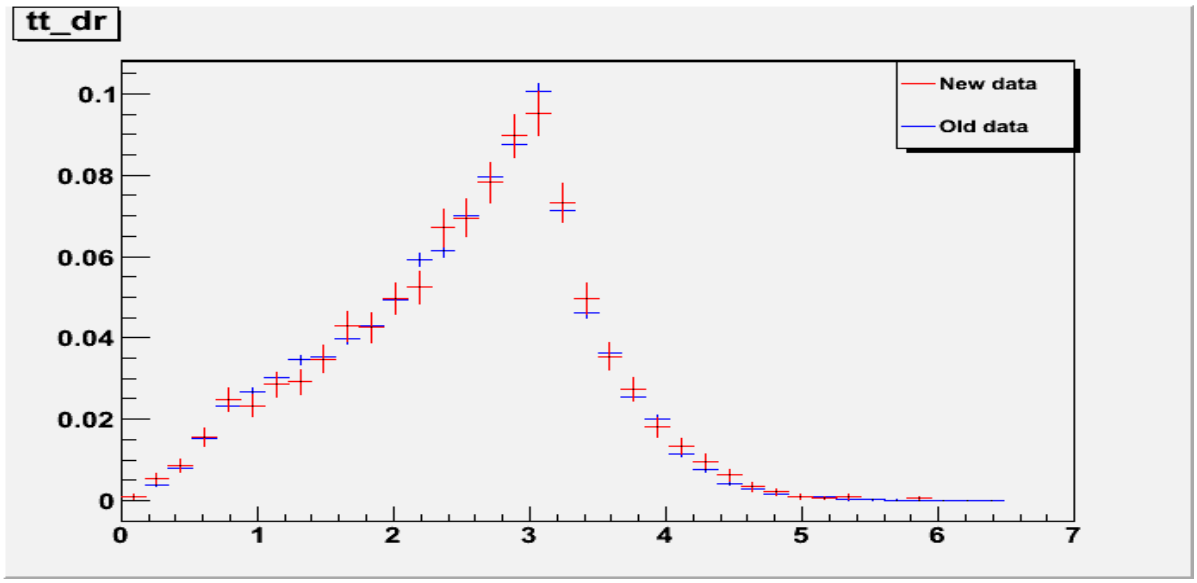

ratio_max2_tt_deta
2
1.8
1.6
1.4
1.2
1
0.8
0.6
0.4
0.2
0
0
1
2
3
4
5
6

Figure 1.58:


tt_dr
New data
Old data
0.1
0.08
0.06
0.04
0.02
0
0
1
2
3
4
5
6
7

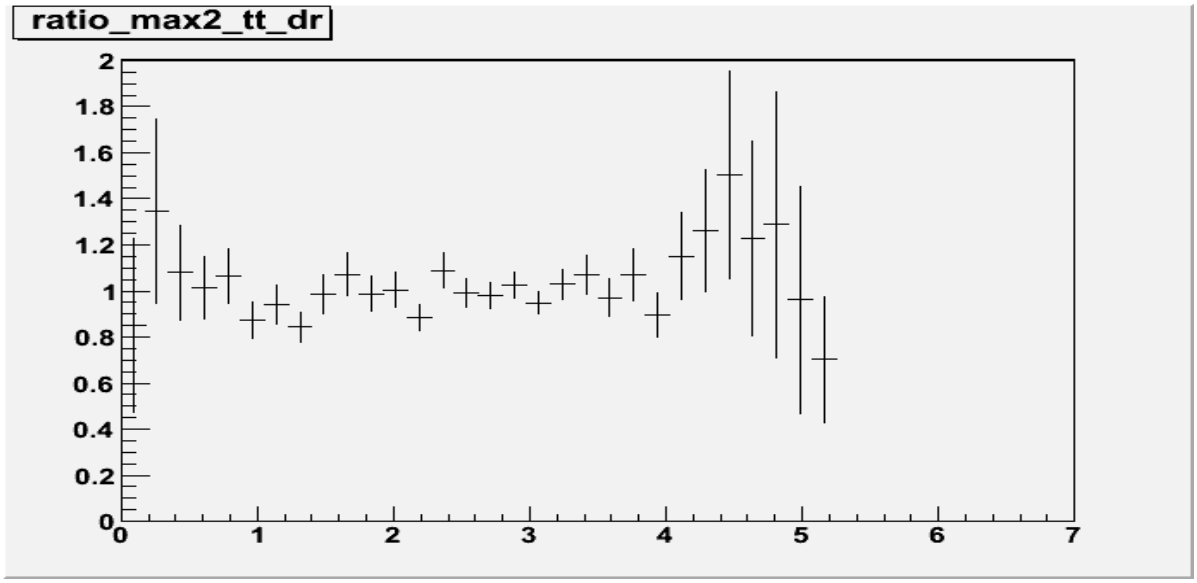
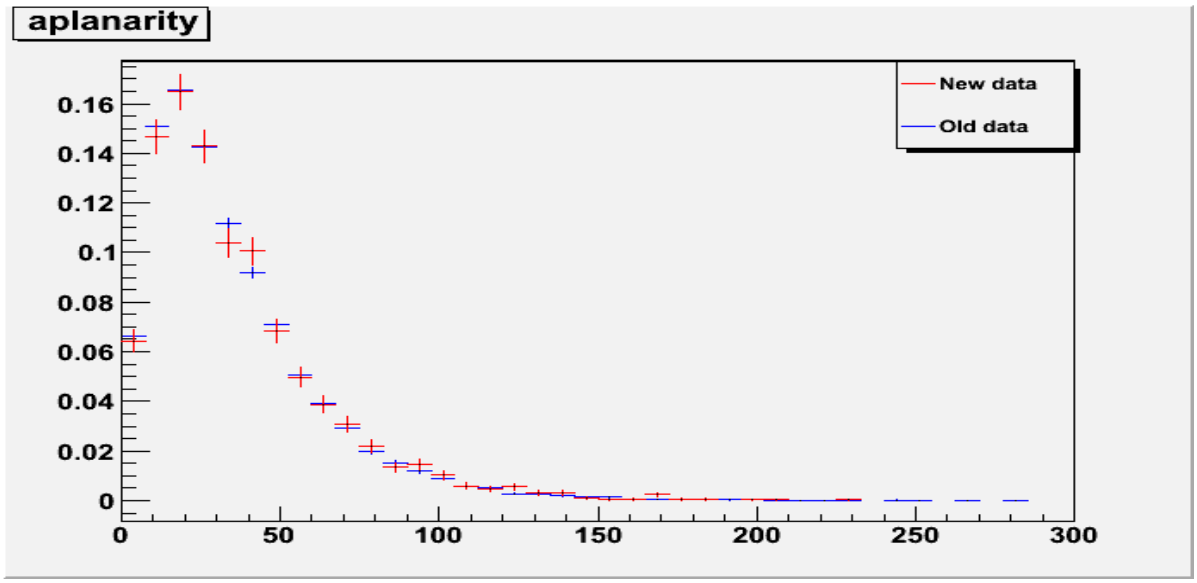

ratio_max2_tt_dr
2
1.8
1.6
1.4
1.2
1
0.8
0.6
0.4
0.2
0
0
1
2
3
4
5
6
7

Figure 1.59:


aplanarity
New data
Old data
0.16
0.14
0.12
0.1
0.08
0.06
0.04
0.02
0
0
50
100
150
200
250
300

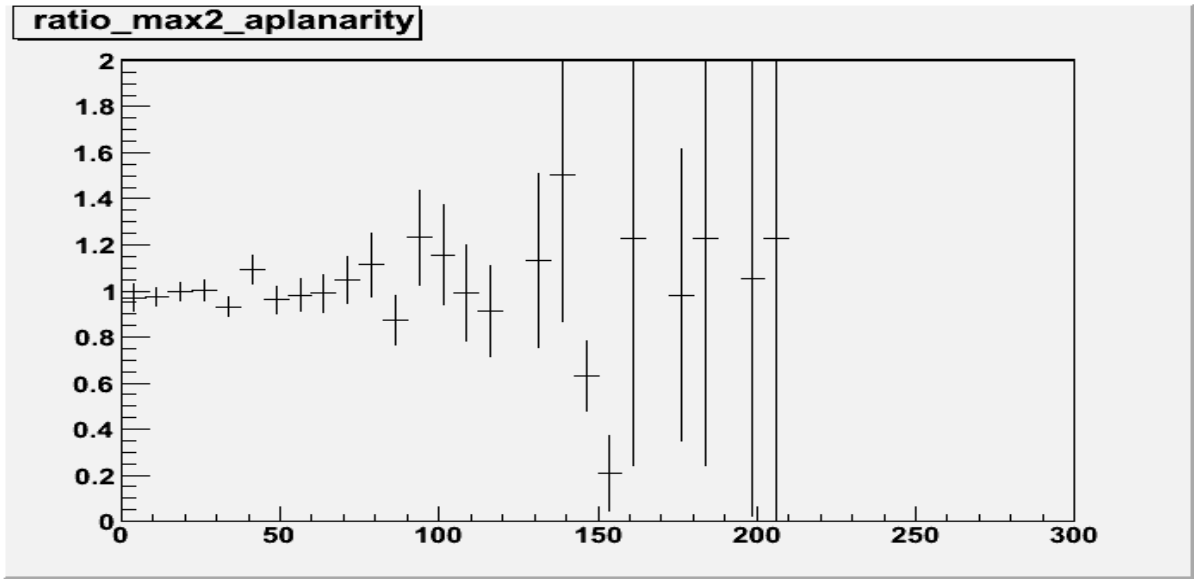
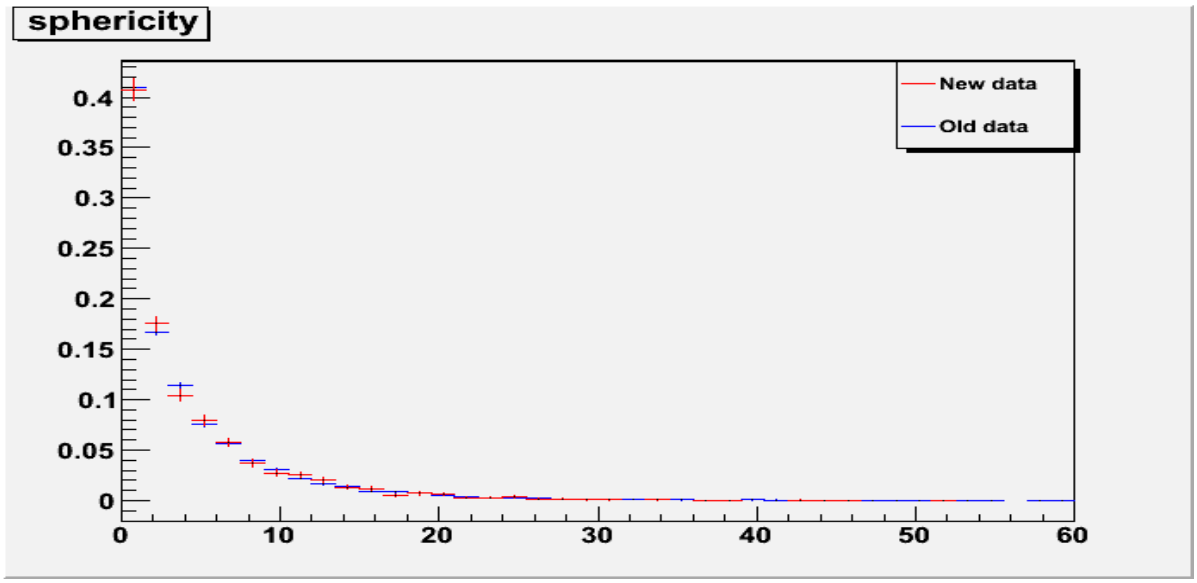

ratio_max2_aplanarity
2
1.8
1.6
1.4
1.2
1
0.8
0.6
0.4
0.2
0
0
50
100
150
200
250
300

Figure 1.60:


sphericity
New data
Old data
0.4
0.35
0.3
0.25
0.2
0.15
0.1
0.05
0
0
10
20
30
40
50
60

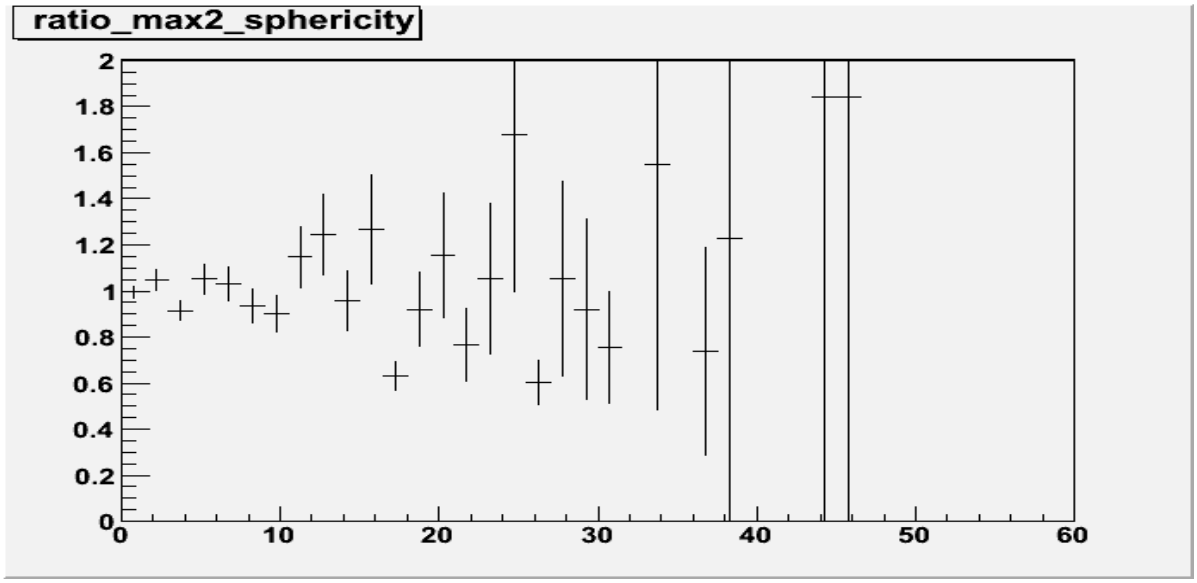
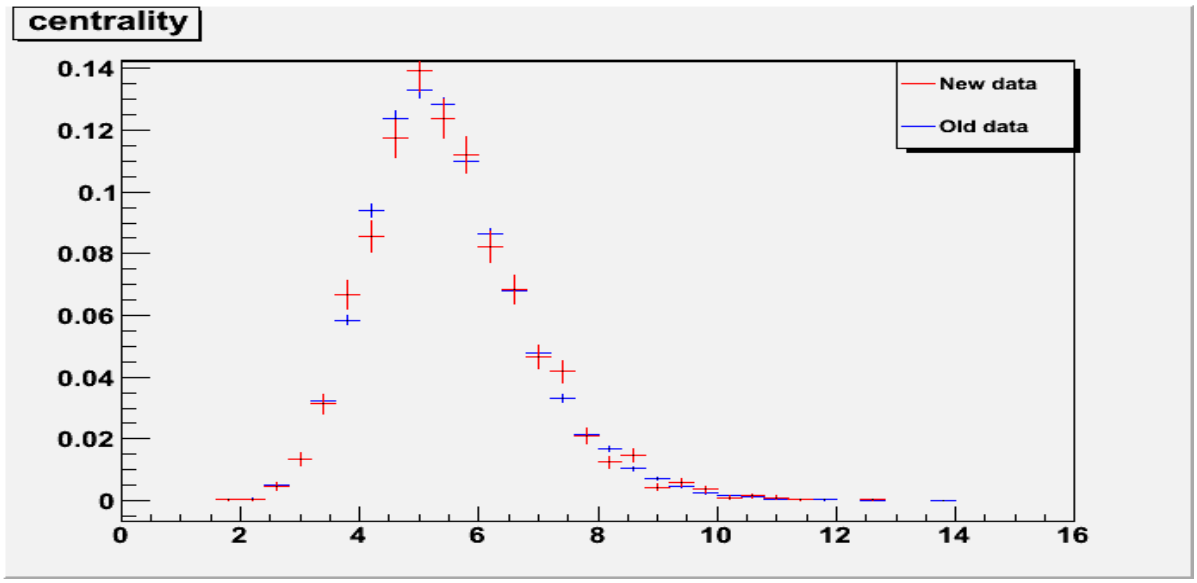

ratio_max2_sphericity
2
1.8
1.6
1.4
1.2
1
0.8
0.6
0.4
0.2
0
0
10
20
30
40
50
60

Figure 1.61:


centrality
New data
Old data
0.14
0.12
0.1
0.08
0.06
0.04
0.02
0
0
2
4
6
8
10
12
14
16

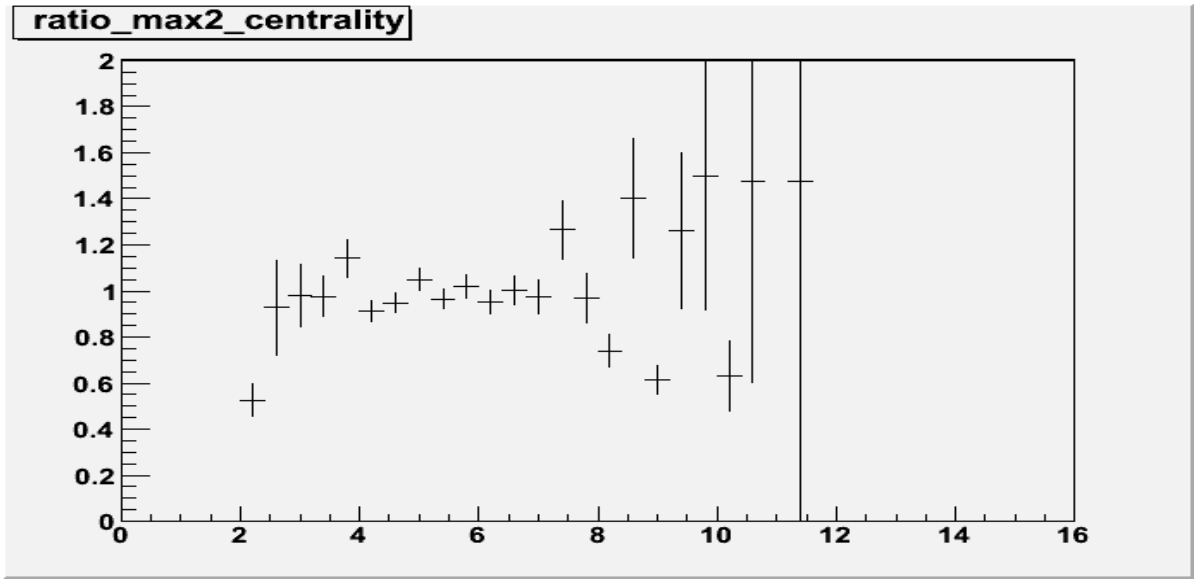
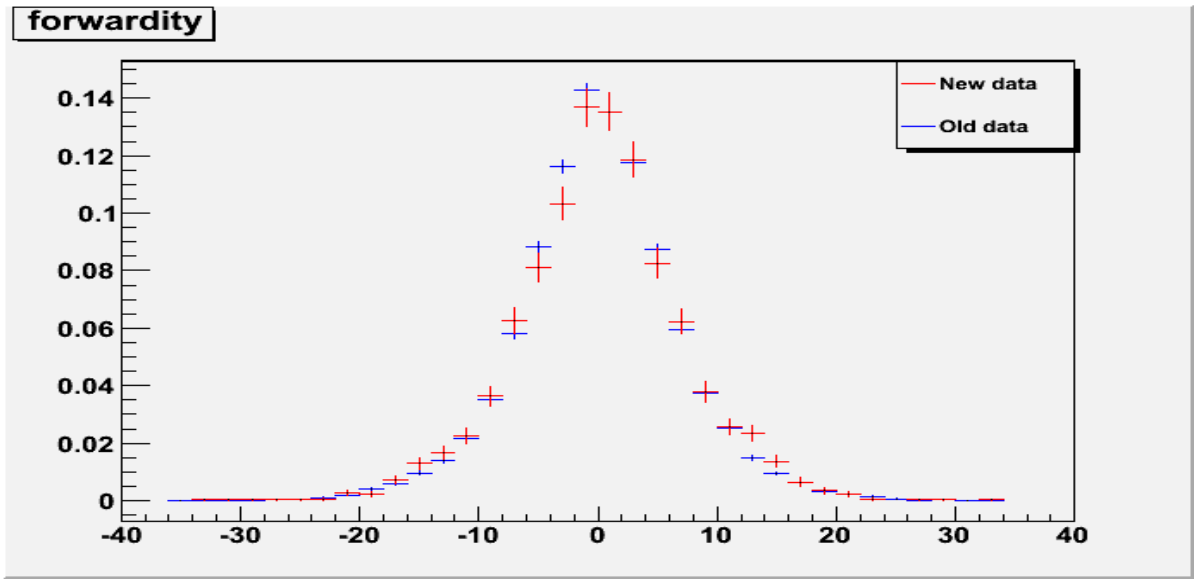

ratio_max2_centrality
2
1.8
1.6
1.4
1.2
1
0.8
0.6
0.4
0.2
0
0
2
4
6
8
10
12
14
16

Figure 1.62:


forwardity
New data
Old data
0.14
0.12
0.1
0.08
0.06
0.04
0.02
0
-40
-30
-20
-10
0
10
20
30
40

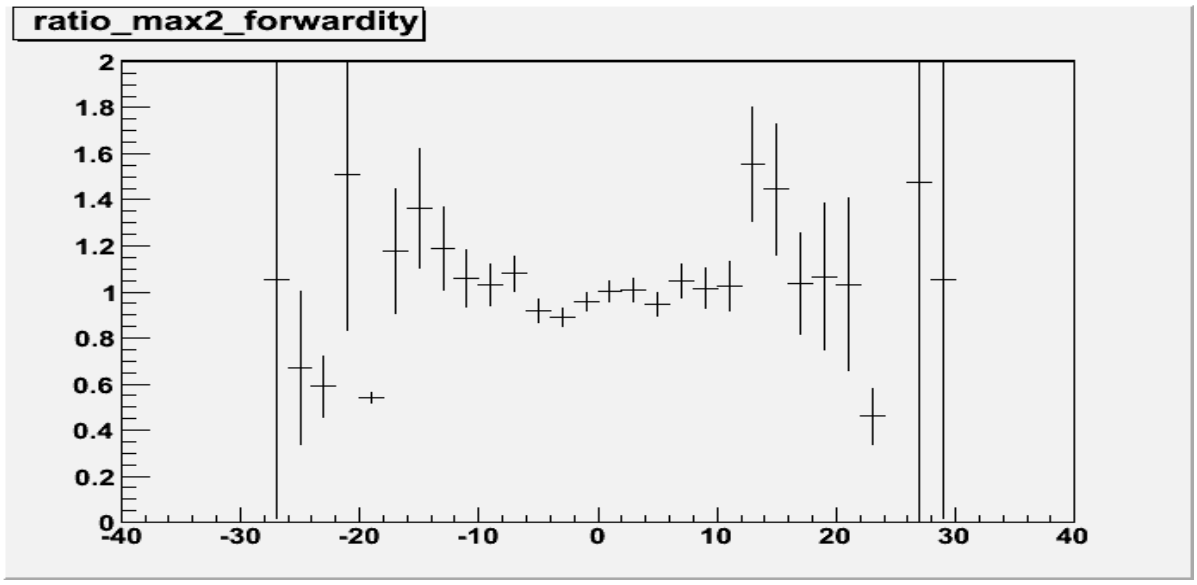

ratio_max2_forwardity
2
1.8
1.6
1.4
1.2
1
0.8
0.6
0.4
0.2
0
-40
-30
-20
-10
0
10
20
30
40

Figure 1.63: