Hypothesis plots summary

1666957, Gustavo Espinal Lugo

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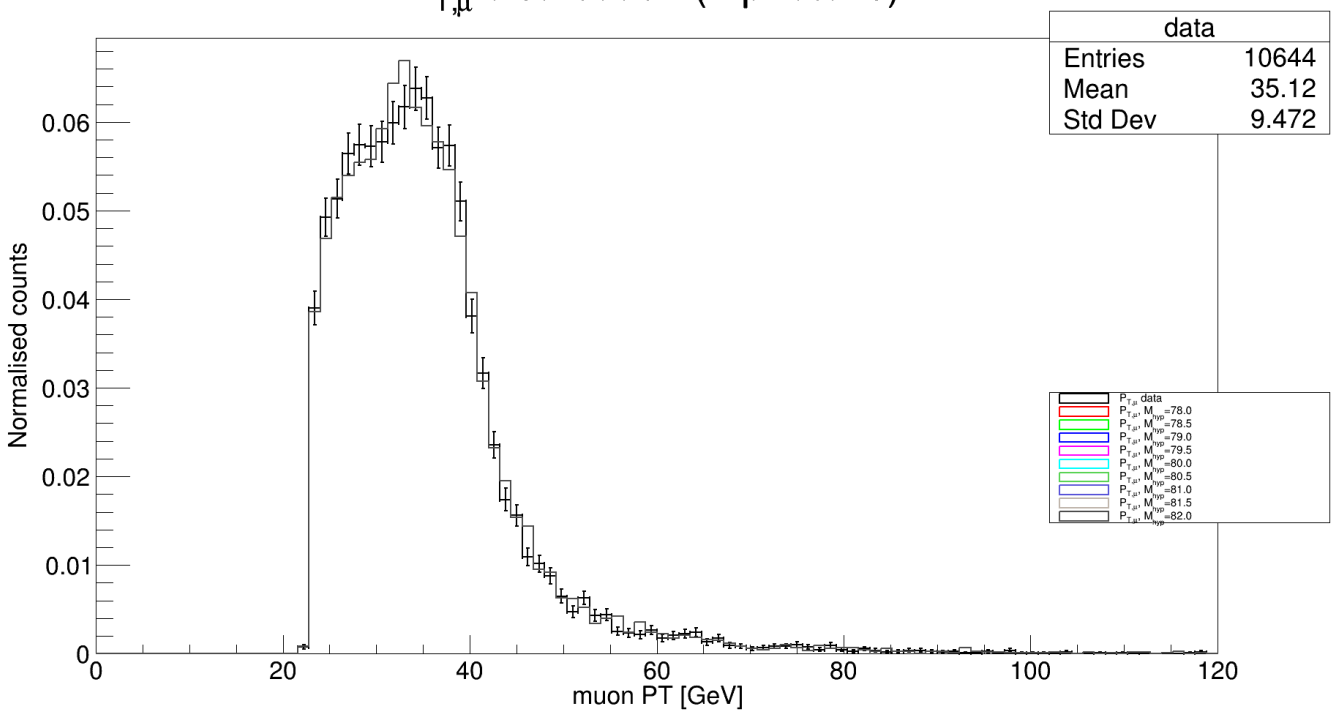
Plots and corresponding metadata

mean expected W mass: 80.379 $[GeV/c^2]$,
mean hypothesis masses: [78. 78.5 79. 79.5 80. 80.5 81. 81.5 82.] $[GeV/c^2]$,
mass width: 2.07 $[GeV/c^2]$,
chi_square value of hypothesis fit: 1.5415639895735953
Absolute path to figure: /home/physics/phuxdp/Desktop/PX402 Physics Project/WBosonProject/T2W5/plots/r
Next lines are the data of the shown histograms (if needed):
All quantities: 80.379, [78. 78.5 79. 79.5 80. 80.5 81. 81.5 82.], 2070, 1.5415639895735953
X_energ_vls = [0.6, 1.7999999999999998, 3.0, 4.199999999999999, 5.4, 6.6, 7.8, 9.0, 10.2, 11.3999999999
12.6, 13.799999999999999, 15.0, 16.2, 17.4, 18.6, 19.799999999999997, 21.0, 22.2, 23.4, 24.6,
25.799999999999997, 27.0, 28.199999999999996, 29.4, 30.6, 31.799999999999997, 33.0, 34.2,
35.4, 36.599999999999994, 37.8, 39.0, 40.2, 41.4, 42.599999999999994, 43.8, 45.0, 46.2, 47.4,
48.599999999999994, 49.8, 51.0, 52.2, 53.4, 54.599999999999994, 55.8, 57.0, 58.199999999999996,
59.4, 60.599999999999994, 61.8, 63.0, 64.19999999999999, 65.4, 66.6, 67.8, 69.0, 70.19999999999999,
71.4, 72.6, 73.8, 75.0, 76.19999999999999, 77.4, 78.6, 79.8, 81.0, 82.19999999999999, 83.4,
84.6, 85.8, 87.0, 88.19999999999999, 89.4, 90.6, 91.8, 93.0, 94.19999999999999, 95.4, 96.6, 97.8,
99.0, 100.19999999999999, 101.4, 102.6, 103.8, 105.0, 106.19999999999999, 107.4, 108.6, 109.8,
111.0, 112.19999999999999, 113.4, 114.6, 115.79999999999998, 117.0, 118.19999999999999,
119.4]
Y_data_bin_cnts = [0.0, 0.0, 0.0, 0.0, 0.0, 0.0, 0.0, 0.0, 0.0, 0.0, 0.0, 0.0, 0.0, 0.0, 0.0, 0.0, 0.0, 0.0,
8.0, 415.0, 524.0, 546.0, 600.0, 611.0, 609.0, 614.0, 637.0, 656.0, 678.0, 667.0, 607.0, 610.0, 543.0,
405.0, 337.0, 251.0, 185.0, 166.0, 116.0, 108.0, 93.0, 69.0, 50.0, 67.0, 46.0, 47.0, 27.0, 25.0, 23.0,
28.0, 19.0, 22.0, 24.0, 26.0, 14.0, 19.0, 10.0, 9.0, 6.0, 7.0, 9.0, 9.0, 11.0, 8.0, 5.0, 10.0, 5.0, 3.0, 6.0,
4.0, 2.0, 3.0, 4.0, 4.0, 3.0, 2.0, 3.0, 1.0, 1.0, 3.0, 0.0, 4.0, 1.0, 1.0, 1.0, 1.0, 2.0, 0.0, 0.0, 1.0, 0.0,
1.0, 1.0, 0.0, 0.0, 0.0, 0.0, 1.0, 2.0, 0.0]
Y_model_bin_cnts = [0.0, 0.0, 0.0, 0.0, 0.0, 0.0, 0.0, 0.0, 0.0, 0.0, 0.0, 0.0, 0.0, 0.0, 0.0, 0.0, 0.0, 0.0,
8.647396087646484, 395.85760498046875, 480.4093322753906, 527.4892578125, 553.4312744140625,
568.8042602539062, 571.686767578125, 607.2369995117188, 660.0816650390625, 686.0238037109375,
632.218017578125, 611.0799560546875, 591.86376953125, 560.15673828125, 483.2912902832031,
417.9559326171875, 315.14862060546875, 238.28334045410156, 199.85061645507812, 157.574691772
147.966552734375, 98.00386810302734, 94.1605453491211, 64.37507629394531, 63.41425704956055,
53.80601501464844, 34.5895881652832, 41.31534194946289, 43.237003326416016, 24.98137474060058
36.51123809814453, 24.981365203857422, 23.05971908569336, 18.255619049072266, 21.138080596923
19.216461181640625, 16.333972930908203, 15.373154640197754, 12.49068546295166, 8.647391319274
5.764925479888916, 4.804107666015625, 5.764931678771973, 10.569037437438965, 6.725745201110841
3.843287229537964, 9.608217239379883, 5.764933109283447, 6.725752830505371, 6.725753784179687



4.804112434387207, 2.882465362548828, 5.764929294586182, 2.8824663162231445, 2.8824565410614(
0.0, 2.8824644088745117, 2.8824639320373535, 0.9608219265937805, 6.725756645202637, 2.88246870
1.9216444492340088, 1.9216464757919312, 0.9608224630355835, 0.9608215093612671, 0.9608214497
0.9608220458030701, 1.9216439723968506, 0.9608096480369568, 0.0, 1.9216431379318237, 0.0,
0.960809588432312, 0.0, 1.921645998954773, 1.921644926071167, 0.0, 0.9608221650123596,
2.8824658393859863, 0.0, 0.9608216285705566, 0.0]

Found optimal massses (χ^2 roots): [81.04356316] $[GeV/c^2]$ Uncertainty [GeV/c^2] : $1.4210854715202004e-14$

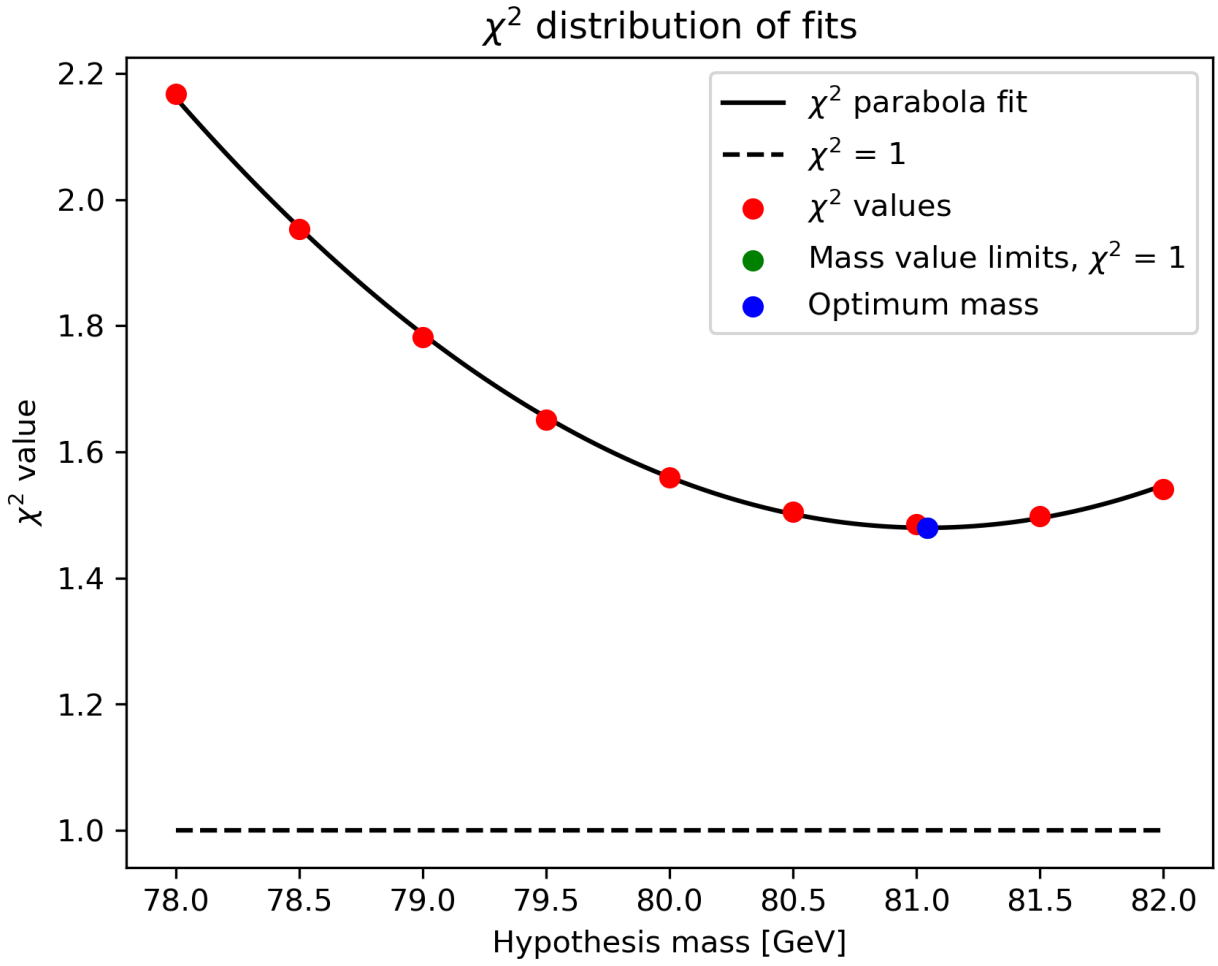


Figure 2: χ^2 of hypothesis masses.

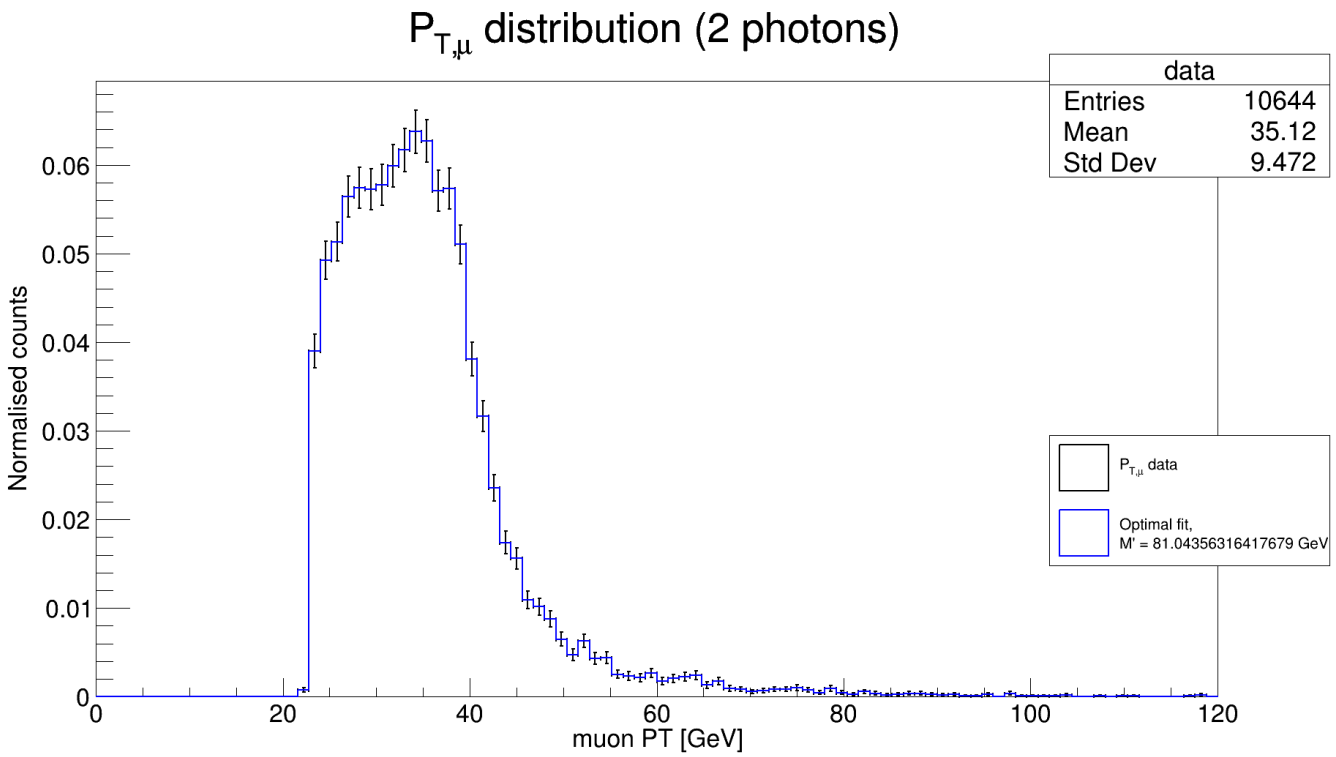


Figure 3: Data and optimum fit with $\chi^2 = 0.029311644621615302$. Used the hypothesis mass of 81.04356316417679±1.4210854715202004e-14 $[GeV/c^2]$.