Hypothesis plots summary

1666957, Gustavo Espinal Lugo

February 21, 2022

Plots

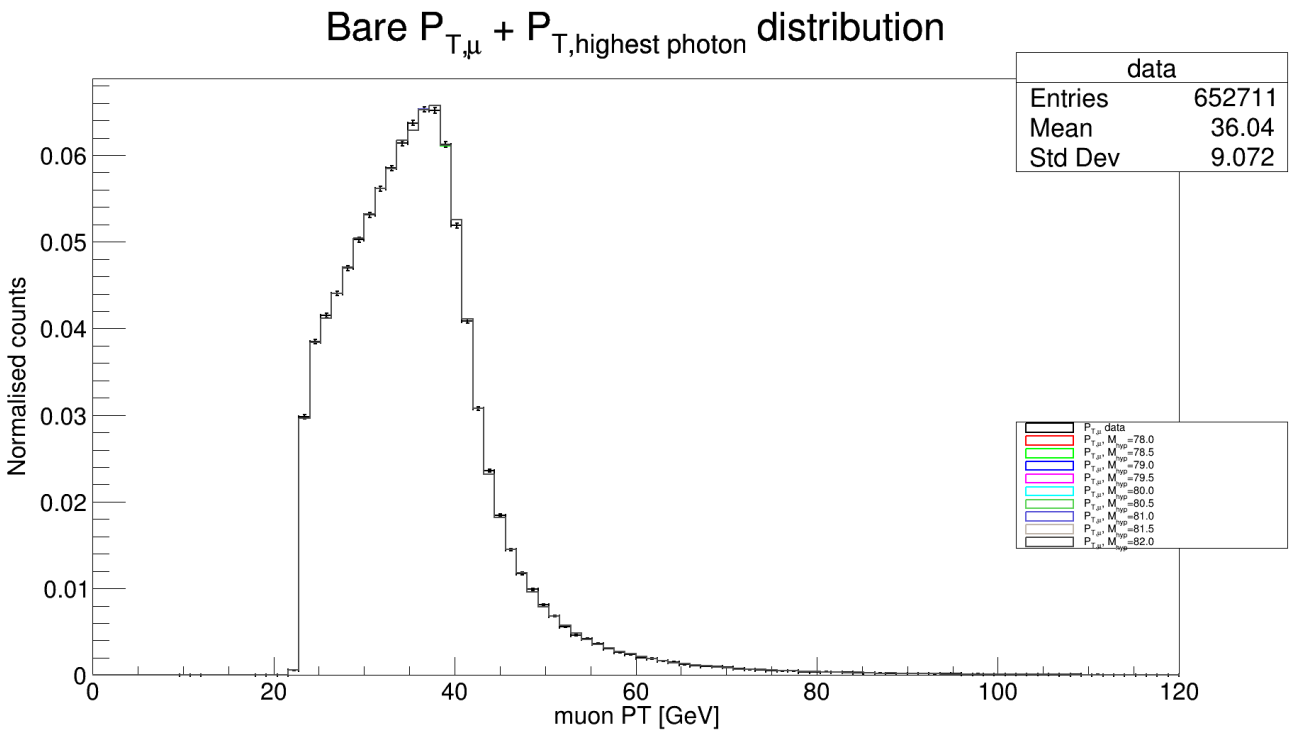

Figure 1: Hypothesis masses [78. 78.5 79. 79.5 80. 80.5 81. 81.5 82.].

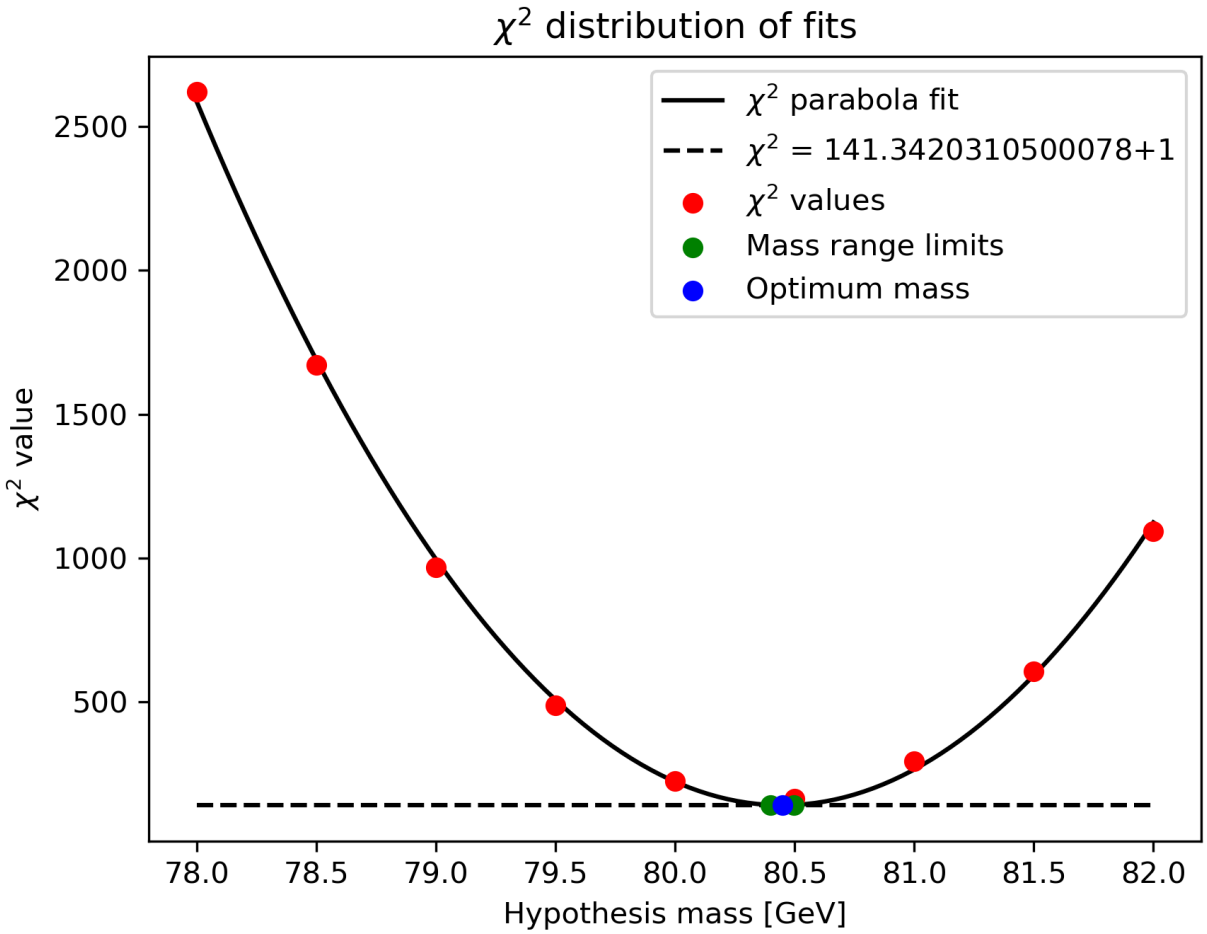

Figure 2: χ^2 of hypothesis masses.

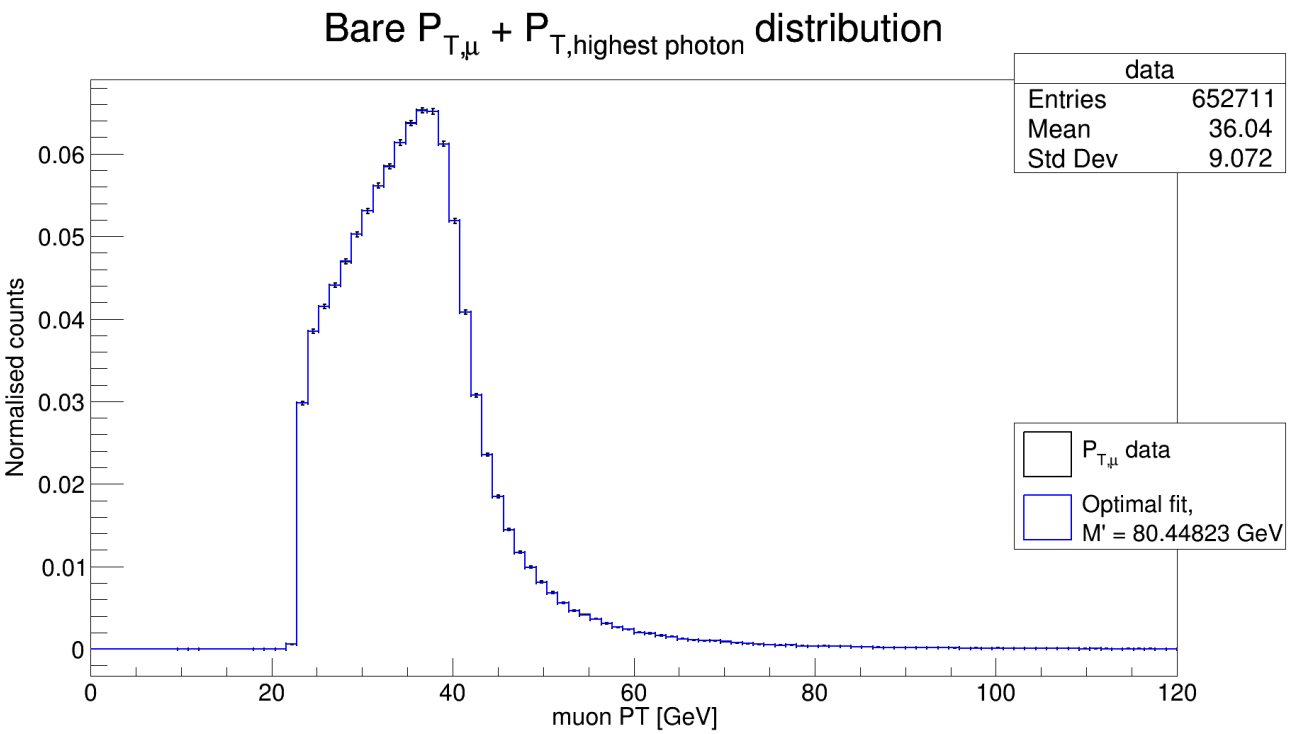

Figure 3: Data and optimum fit with $\chi^2/DoF(n\_hist\_bins - parms\_fit) = 5.1936611954195815/98$. Used the hypothesis mass of 80.44823±0.0495 $[GeV/c^2]$.

Summary and Metadata

Found optimal massses (χ^2 roots): [80.44823] $[GeV/c^2]$ Uncertainty $[GeV/c^2]$: 0.0495
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: 0.02 $[GeV/c^2]$,
chi_square value of hypothesis fit: 1093.9120240704558
Absolute path to figure: /home/physics/phuxdp/Desktop/PX402 Physics Project/WBosonProject/T2W7/5.3
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.], 20, 1093.9120240704558
X_energ_vls = [0.6, 1.7999999999999998, 3.0, 4.199999999999999, 5.4, 6.6, 7.8, 9.0, 10.2,
11.399999999999999, 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, 31.7999999999999
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, 3.914839029312134, 7.3158698081970215,
0.0, 0.0, 0.0, 0.0, 0.0, 1.8532516956329346, 0.0, 8.512845039367676, 364.3307189941406,
18675.83984375, 24139.208984375, 26023.193359375, 27619.46484375, 29435.3359375, 31491.35156
33274.7265625, 35184.171875, 36659.73828125, 38457.1328125, 39938.1171875, 40909.2109375,
40829.10546875, 38368.55078125, 32513.453125, 25600.984375, 19284.06640625, 14777.158203125,
11567.3134765625, 9068.5380859375, 7348.0126953125, 6204.6728515625, 5086.21044921875,
4282.66845703125, 3528.14892578125, 2908.03173828125, 2616.2255859375, 2290.17431640625,
1938.22998046875, 1661.7109375, 1489.5281982421875, 1260.3673095703125, 1196.8701171875,
1027.068115234375, 944.4703369140625, 781.9117431640625, 697.2144775390625, 643.0242309570
629.857177734375, 571.9203491210938, 472.267578125, 416.2782287597656, 375.2474060058594,
335.4554443359375, 300.6578063964844, 304.9139709472656, 239.71762084960938, 227.636138916
238.98532104492188, 220.6566162109375, 216.81809997558594, 174.73207092285156, 159.1997222
135.3899383544922, 117.430419921875, 127.86116790771484, 124.22683715820312, 103.604988098
101.61972045898438, 97.64124298095703, 93.59896087646484, 74.43513488769531, 83.5136566162
67.17418670654297, 83.17903900146484, 60.99058532714844, 55.30904006958008, 54.83793640136
42.54710388183594, 53.403053283691406, 40.84602355957031, 43.63003158569336, 29.5836505889
37.01325607299805, 33.22964859008789, 23.68976593017578, 30.398338317871094, 29.2036170959
30.332721710205078, 23.821918487548828, 23.34355926513672]
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,
2.3152191638946533, 3.773669581146240, 369.15667246093750, 17869.1484375, 23126.240234375,
24796.482421875, 26514.8515625, 28379.01171875, 30396.947265625, 32035.251953125, 33814.7773
35229.30078125, 37159.828125, 37868.828125, 39324.5859375, 39589.21875, 36811.70703125,
31647.505859375, 24749.189453125, 18565.19140625, 13973.33984375, 10971.5908203125,
8734.6298828125, 7132.94970703125, 5803.6669921875, 4737.0859375, 4086.4326171875,
3442.59033203125, 2906.9541015625, 2474.874267578125, 2119.322265625, 1877.453369140625,
1647.02978515625, 1473.7213134765625, 1273.8658447265625, 1148.542236328125, 984.457092285
854.316650390625, 816.1705932617188, 685.8123779296875, 640.6443481445312, 564.1279296875,
486.54791259765625, 429.5003967285156, 424.9681396484375, 389.94720458984375, 348.35836791
301.1899108886719, 287.1850891113281, 260.9803466796875, 241.9152374267578, 217.8165588378
188.58425903320312, 165.58604431152344, 195.9553985595703, 143.46533203125, 136.9756164550
145.3784637451172, 120.14228820800781, 106.9736099243164, 112.29109954833984, 99.811355590

86.23390197753906, 69.68730163574219, 83.48699951171875, 82.92284393310547, 78.75749206542
53.14684295654297, 56.880157470703125, 60.51396942138672, 46.391056060791016, 41.936401367
44.52500534057617, 43.73143768310547, 32.11105728149414, 38.09151840209961, 31.45993041992
32.030128479003906, 25.375961303710938, 29.208232879638672, 28.14249038696289, 27.36880493
30.289201736450195, 14.724198341369629]