Hypothesis plots summary

1666957, Gustavo Espinal Lugo

February 21, 2022

Plots

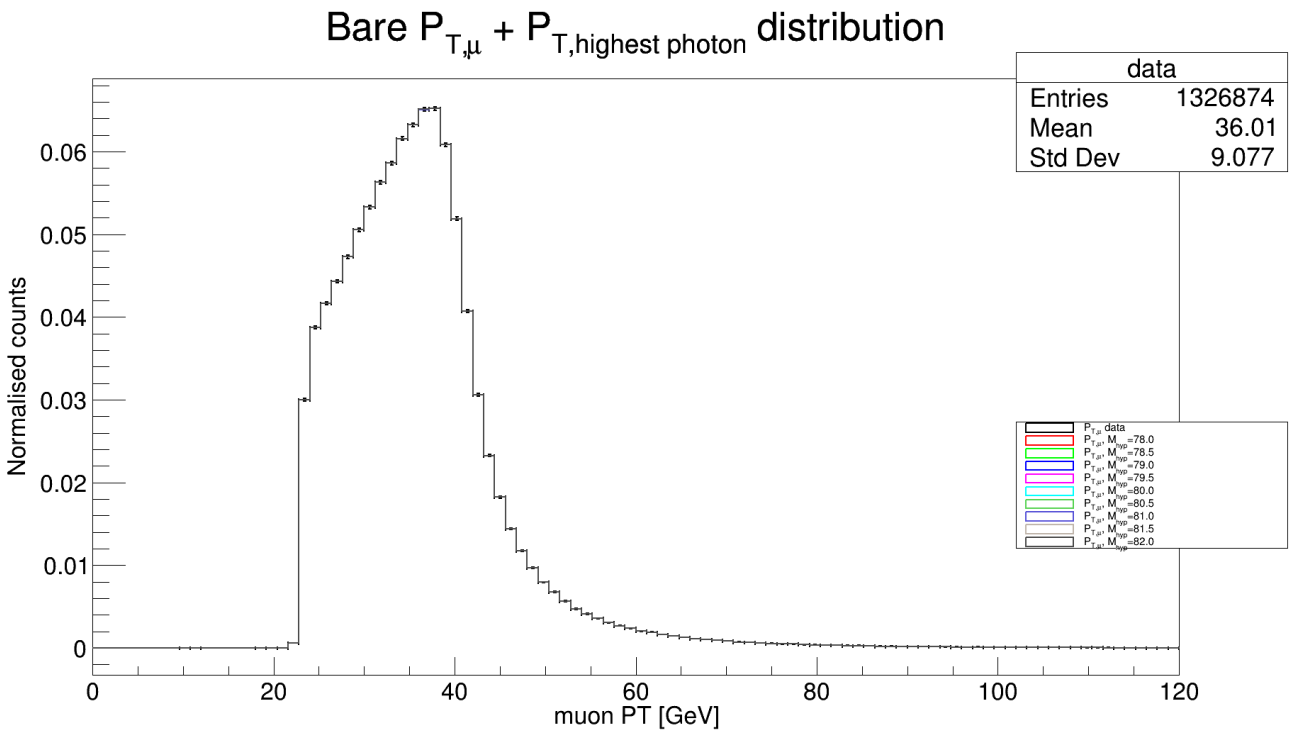

Figure 1: Hypothesis masses [78. 78.5 79. 79.5 80. 80.5 81. 81.5 82.].

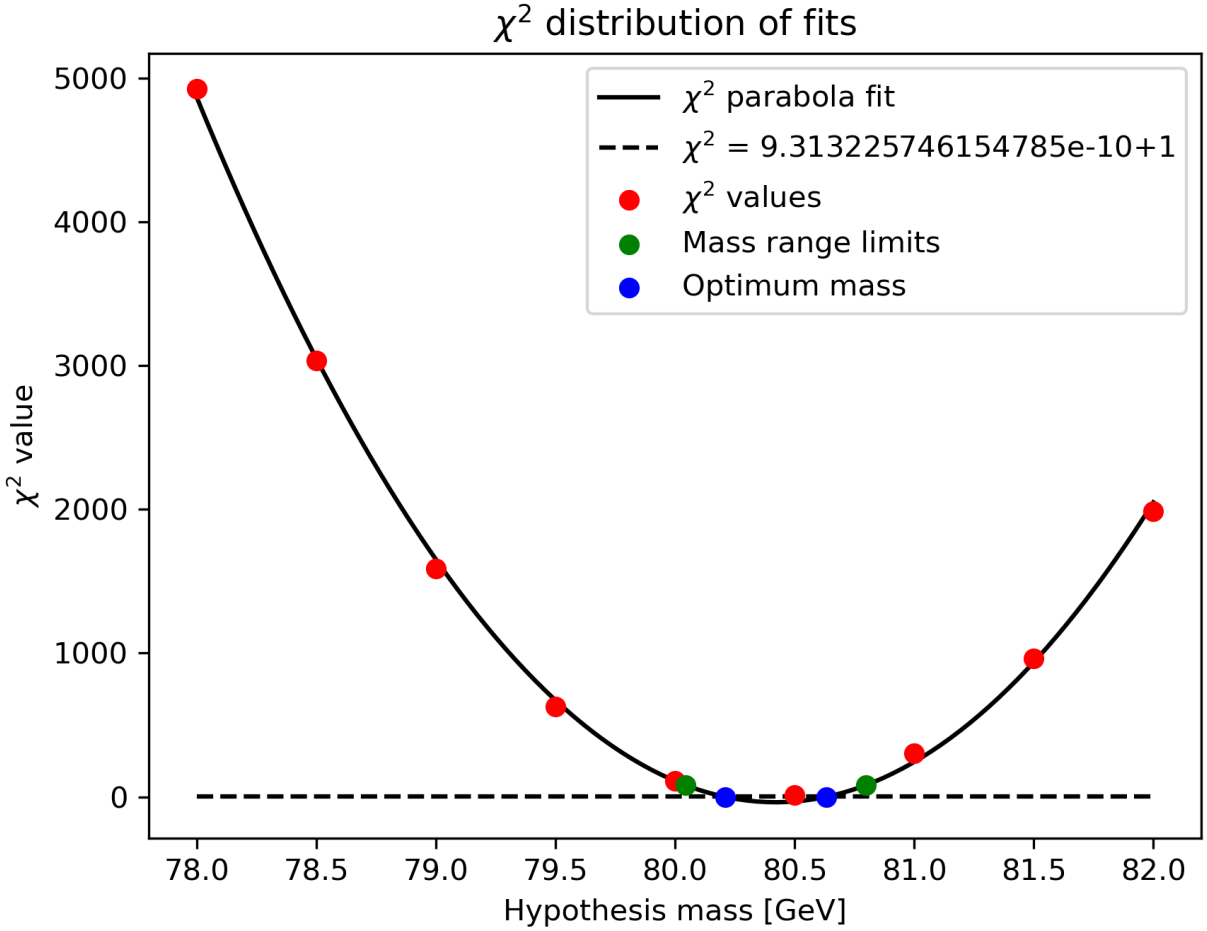

Figure 2: χ^2 of hypothesis masses.

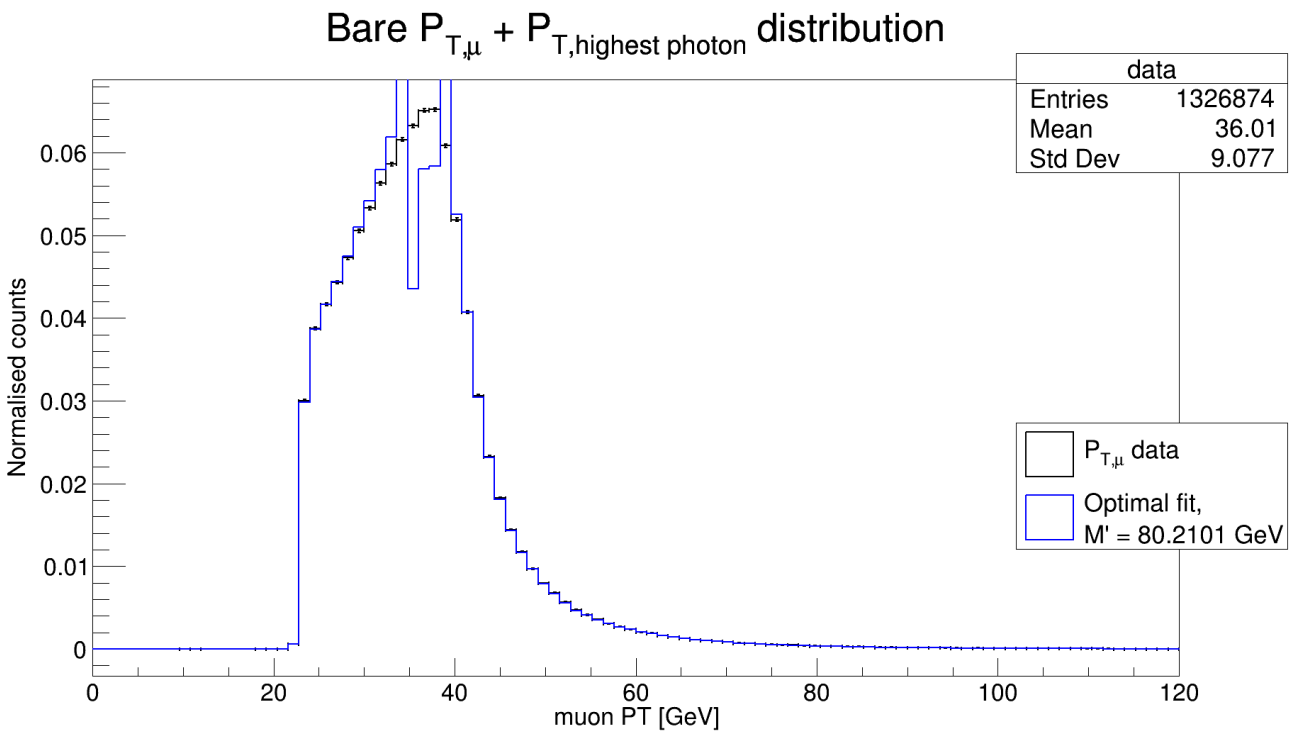

Figure 3: Data and optimum fit with $\chi^2/DoF(n\_hist\_bins - parms\_fit) = 19810.29671854499/98$. Used the hypothesis mass of 80.2101±0.5881 $[GeV/c^2]$.

Summary and Metadata

Found optimal massses (χ^2 roots): [80.2101, 80.6321] $[GeV/c^2]$ Uncertainty $[GeV/c^2]$: 0.5881
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: 1988.167202529701
Absolute path to figure: /home/physics/phuxdp/Desktop/PX402 Physics Project/WBosonProject/T2W7/5.4
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, 1988.167202529701
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, 3.96209454536438, 7.404178619384766,
0.0, 0.0, 0.0, 0.0, 0.0, 1.8971303701400757, 2.4387242794036865, 12.550207138061523, 777.3544921
38559.8515625, 49797.859375, 53488.42578125, 56956.43359375, 60740.625, 64915.109375,
68451.4453125, 72297.0703125, 75291.96875, 79061.34375, 81235.8515625, 83609.1328125,
83742.2109375, 78161.3828125, 66646.8046875, 52290.7109375, 39311.71875, 29867.416015625,
23434.01171875, 18533.13671875, 15061.416015625, 12503.755859375, 10205.6416015625,
8701.9267578125, 7271.6884765625, 6050.79638671875, 5310.3759765625, 4594.41357421875,
3967.63818359375, 3454.964111328125, 3092.94677734375, 2643.26220703125, 2445.8154296875,
2110.482177734375, 1888.160888671875, 1671.9072265625, 1452.42626953125, 1340.964599609375
1241.7301025390625, 1096.080078125, 935.6273803710938, 878.992431640625, 806.3191528320312
719.4329833984375, 629.2896118164062, 621.3318481445312, 530.7376708984375, 492.8795776367
478.0168762207031, 430.6147766113281, 397.7726135253906, 388.6540222167969, 315.8685913085
286.1463317871094, 274.6297607421875, 259.8283386230469, 241.0857696533203, 225.3527221679
214.35128784179688, 192.4956817626953, 171.5360870361328, 164.23287963867188, 175.50608825
152.1048583984375, 141.38917541503906, 123.51136779785156, 121.84324645996094, 106.2351226
86.51546478271484, 101.97271728515625, 87.92898559570312, 78.34464263916016, 70.5812149047
72.94275665283203, 69.06684112548828, 50.504302978515625, 61.81137466430664, 61.6762199401
60.11767578125, 58.61872863769531, 38.80653381347656]
Y_model_bin_cnts = [0.0, 0.0, 0.0, 0.0, 0.0, 0.0, 0.0, 0.0, 3.806844711303711, 7.114062786102295,
0.0, 0.0, 0.0, 0.0, 0.0, 1.8227925300598145, 2.343165874481201, 12.058442115783691, 746.8942260
37042.92578125, 47836.9921875, 51381.671875, 54711.41796875, 58346.65625, 62354.84375,
65751.3828125, 69450.2265625, 72330.7578125, 75955.8671875, 78046.9765625, 80329.640625,
80458.5234375, 75088.8828125, 64011.47265625, 50224.9375, 37760.91796875, 28691.18359375,
22512.982421875, 17806.44140625, 14471.6630859375, 12014.244140625, 9806.1474609375,
8361.30859375, 6987.01123046875, 5813.880859375, 5102.40234375, 4414.4658203125, 3812.209472
3319.623291015625, 2971.788818359375, 2539.71484375, 2349.999267578125, 2027.7996826171875
1814.1884765625, 1606.405517578125, 1395.519775390625, 1288.424560546875, 1193.07556152343
1053.13037109375, 898.96337890625, 844.5482177734375, 774.7225341796875, 691.2413940429688
604.6307983398438, 596.9842529296875, 509.9403381347656, 473.56573486328125, 459.285339355
413.7407531738281, 382.1856994628906, 373.4245300292969, 303.4910583496094, 274.9337158203
263.8685302734375, 249.6470489501953, 231.63888549804688, 216.52224731445312, 205.95198059

184.95289611816406, 164.81448364257812, 157.79750061035156, 168.62889099121094, 146.144760
135.84890747070312, 118.67167663574219, 117.06889343261719, 102.07231140136719, 83.1254043
97.97700500488281, 84.48356628417969, 75.27477264404297, 67.8155517578125, 70.084609985351
66.36051940917969, 48.52533721923828, 59.38933563232422, 59.259498596191406, 57.7620429992
56.321815490722656, 37.285911560058594]