Hypothesis plots summary

1666957, Gustavo Espinal Lugo

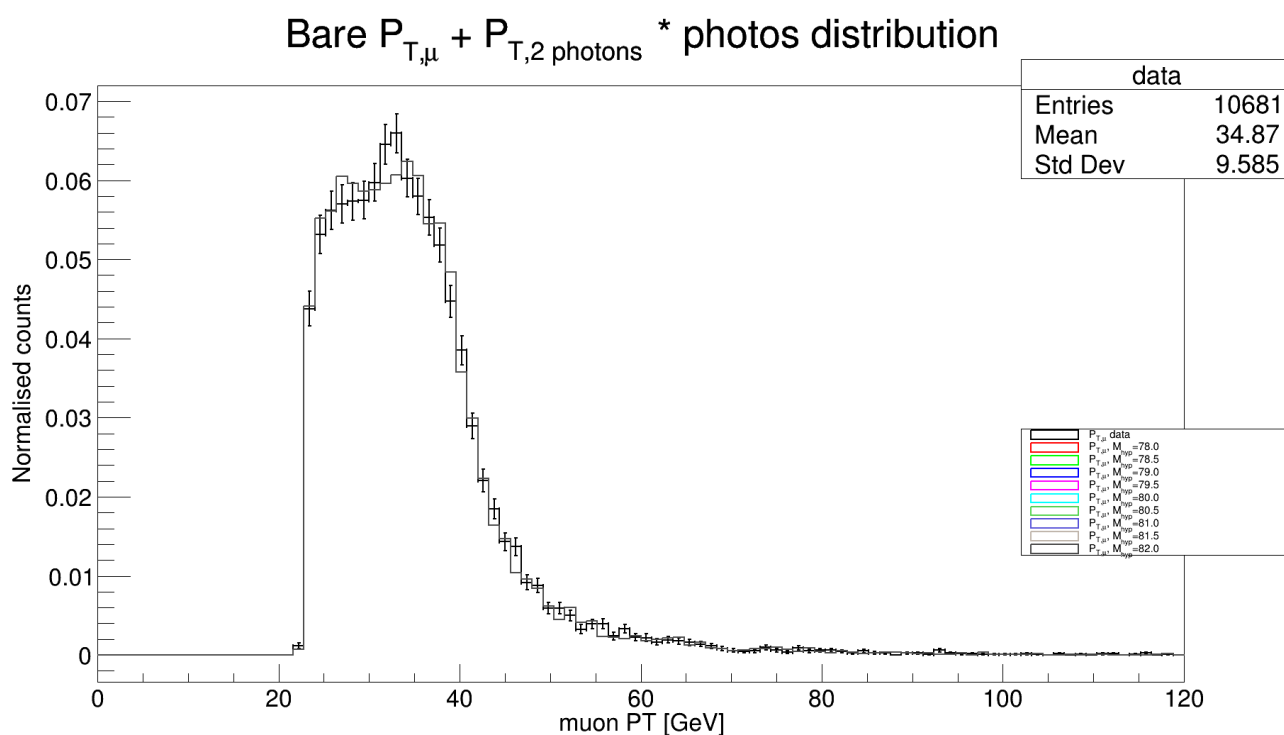February 21, 2022

Plots

Figure 1: Hypothesis masses [78. 78.5 79. 79.5 80. 80.5 81. 81.5 82.].
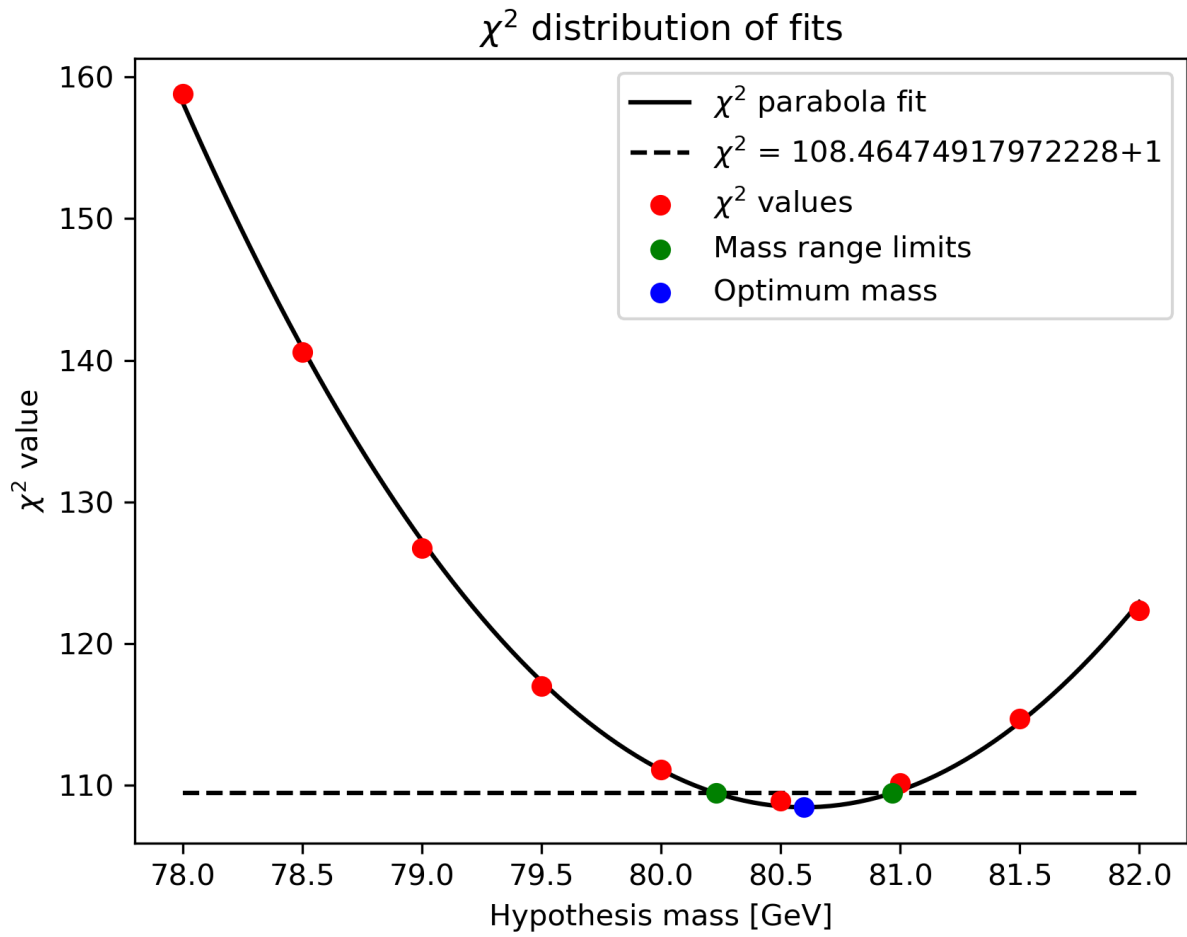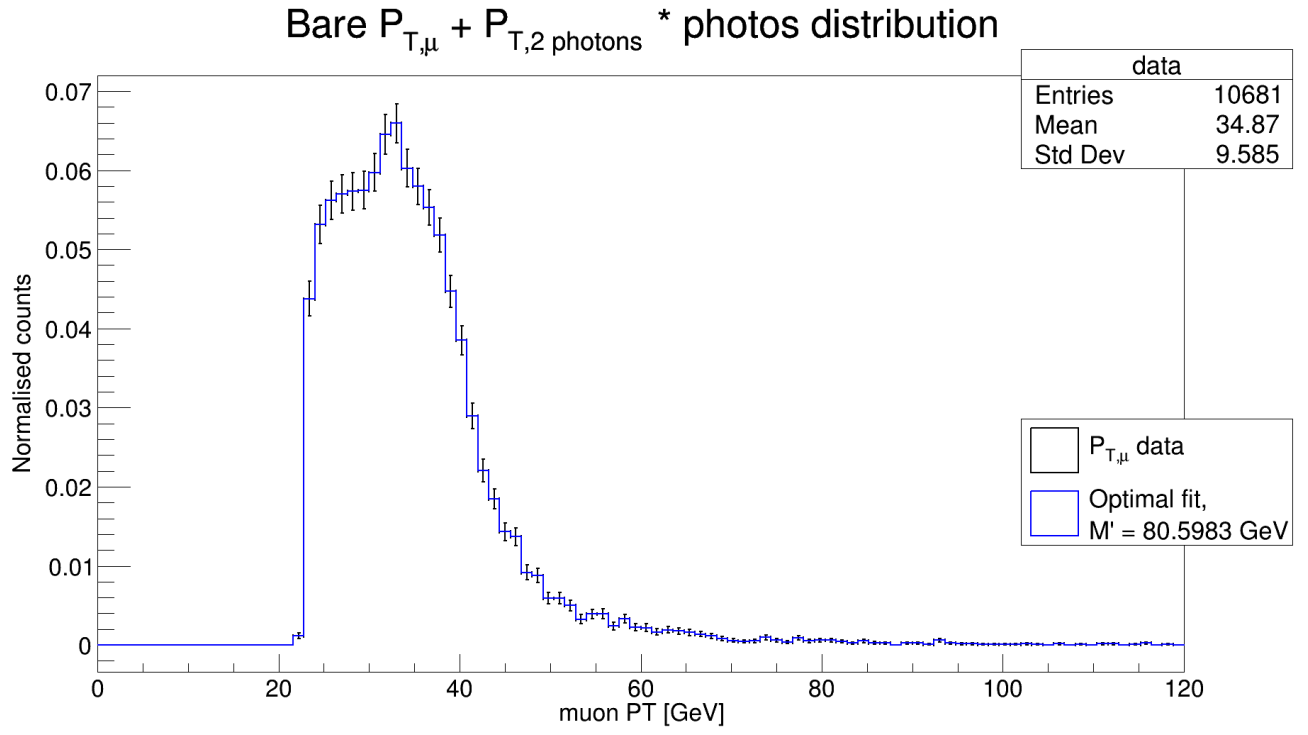
Figure 2: χ^2 of hypothesis masses.

Figure 3: Data and optimum fit with $\chi^2/DoF(n\_hist\_bins - parms\_fit) = 0.337721433704187/98$. Used the hypothesis mass of 80.5983 ± 0.3683 $[GeV/c^2]$.

Summary and Metadata

Found optimal massses (χ^2 roots): [80.5983] $[GeV/c^2]$ Uncertainty $[GeV/c^2]$: 0.3683
    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: 122.37725089460307
Absolute path to figure: /home/physics/phuxdp/Desktop/PX402 Physics Project/WBosonProject/T2W7/6.3
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, 122.37725089460307
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, 0.0, 0.0, 0.0, 0.0, 0.0, 0.0, 0.0, 0.0, 0.0, 0.0,
13.143359184265137, 493.83380126953125, 599.46875, 634.1288452148438, 643.0517578125,
646.9403076171875, 648.586669921875, 673.8614501953125, 727.958251953125, 743.664123535156
679.5944213867188, 653.6885986328125, 623.4255981445312, 584.7772827148438, 504.0935058593
434.4230651855469, 326.7646484375, 248.6658477783203, 208.34298706054688, 161.621017456054
154.332763671875, 103.70340728759766, 99.09188842773438, 66.6778335571289, 66.626762390136
56.33075714111328, 37.015132904052734, 44.26573181152344, 44.59359359741211, 27.1141185760
37.3122673034668, 25.774019241333008, 24.848552703857422, 18.649309158325195, 21.450942993
20.01967430114746, 18.00178337097168, 15.689130783081055, 13.025360107421875, 9.0137376785
6.270322799682617, 4.985998153686523, 5.854853630065918, 10.8529634475708, 6.9301414489746
3.981285572052002, 9.929522514343262, 6.179442882537842, 6.874322414398193, 7.054414272308
4.957777976989746, 2.955044984817505, 5.815589904785156, 3.0419135093688965, 2.91946220397
0.0, 2.9462780952453613, 2.8662829399108887, 0.9492214918136597, 6.862863540649414,
2.857367515563965, 1.9221560955047607, 1.9757680892944336, 0.9604125618934631, 0.928338408
1.0111833810806274, 1.1129320859909058, 1.9098789691925049, 1.0036958456039429, 0.0,
1.9075672626495361, 0.0, 0.9564955234527588, 0.0, 1.9230239391326904, 1.9145958423614502,
0.0, 0.9512364268302917, 2.8976240158081055, 0.0, 0.9569019079208374, 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, 8.319368362426758, 475.4202575683594, 595.244140625, 605.114013671875, 651.886840820312
642.485595703125, 631.841796875, 633.4356079101562, 642.363037109375, 654.2439575195312,
672.8260498046875, 653.0094604492188, 587.609130859375, 588.6119384765625, 521.47845458984
385.7652282714844, 322.73455810546875, 240.5092010498047, 176.94732666015625, 158.18025207
112.0465087890625, 103.15177154541016, 90.53386688232422, 66.29998016357422, 48.3643951416
64.8060302734375, 44.66095733642578, 46.24396514892578, 25.453548431396484, 24.60646438598
22.03731918334961, 26.4770565032959, 19.140121459960938, 21.001853942871094, 23.7819690704
24.411296844482422, 13.179255485534668, 17.7423095703125, 9.631636619567871, 8.78080749511
5.574260234832764, 6.48887300491333, 8.517304420471191, 8.431732177734375, 10.399283409118
7.753097057342529, 4.627254009246826, 9.6729154586792, 4.712258338928223, 2.98989439010620
6.291616439819336, 3.7975032329559326, 1.9439101219177246, 2.926884651184082, 3.8820984363
3.7586722373962402, 2.934828996658325, 1.9709924459457397, 2.8058698177337646, 0.911644160
0.9780144095420837, 2.895014762878418, 0.0, 3.7429685592651367, 0.9433498978614807,

4

0.9108681678771973, 0.9829486012458801, 0.9195568561553955, 1.9634562730789185, 0.0, 0.0, 0.9724108576774597, 0.0, 0.9237014055252075, 0.953307032585144, 0.0, 0.0, 0.0, 0.0, 0.9438433051109314, 2.1205031871795654, 0.0]