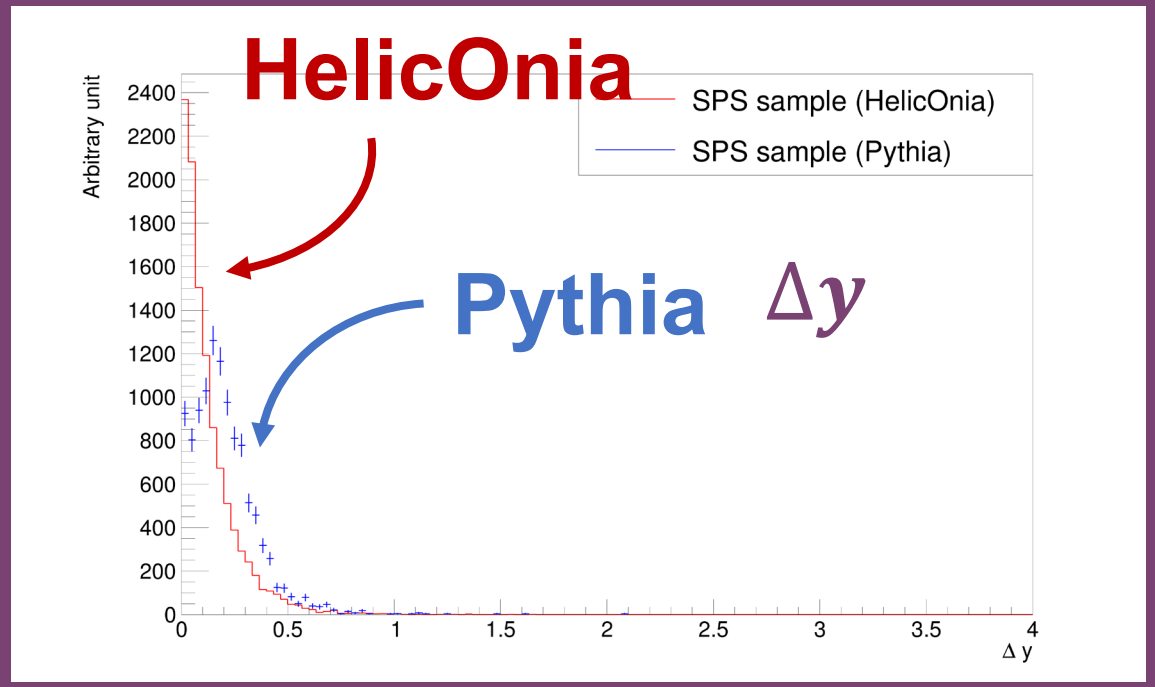
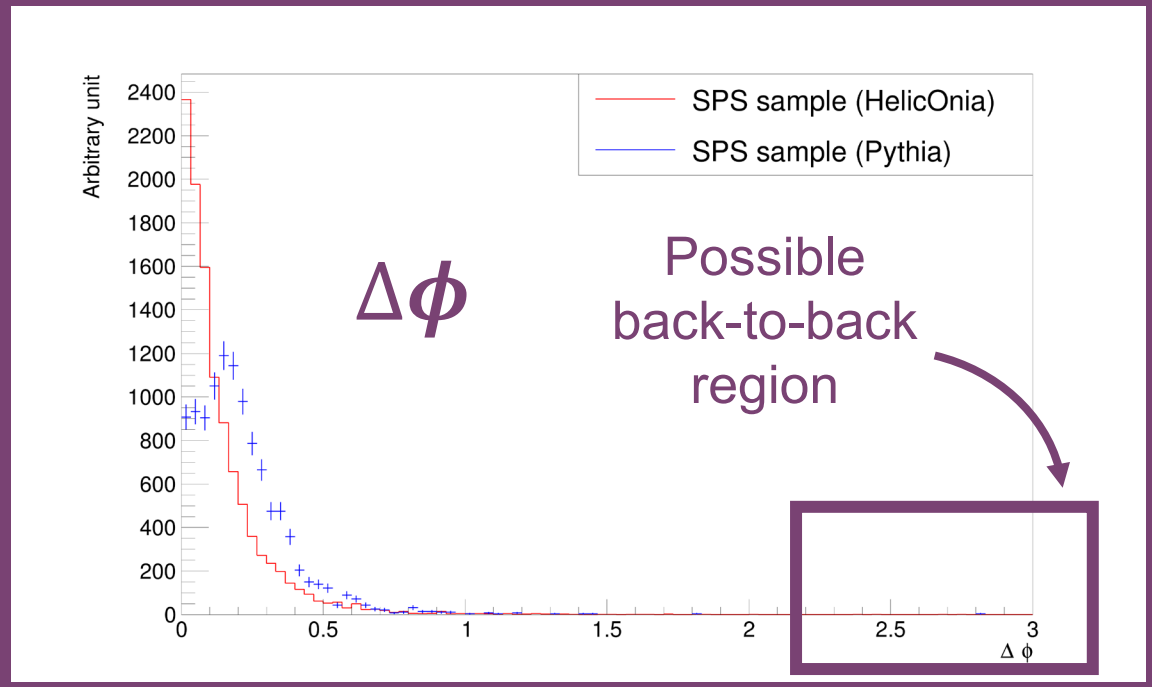
HelicOnia SPS sample

- A HelicOnia sample is provided by the resonance study, with issues:
  - Original root file has been lost, only a ‘list’ file is provided
  - The file is produced with 2018 condition (2016 is not produced at all)
  - Only events fulfill the selections of the resonance study are retrieved
  - No GEN level information is saved

Output Format:
runNum lumiNum eventNum dpsType spsType directGen massJpsiJpsi Jpsi1Px Jp
j1mu2py j1mu2pz j1mu2e j2mu1px j2mu1py j2mu1pz j2mu1e j2mu2px j2mu2py
1 51 46 0 0 0 6.531701 15.296072 9.660364 -15.531125 24.043691 15.651363 7.8
1.925612 -2.149497 4.809706 9.536308 6.136260 -11.683632 16.282299 5.909203
1 51 87 0 0 0 6.798146 8.705041 -10.933047 16.366602 21.743176 9.465580 -8.78
12.872808 16.729244 7.185382 -4.749538 12.303919 15.019501 2.142828 -3.9066
1 107 89 0 0 0 7.105394 -9.337925 -10.690619 -61.096394 62.800050 -4.535589
22.250894 -4.540313 -7.352463 -38.092770 39.060766 -0.697946 -3.008266 -14.9
1 160 40 0 0 0 6.272858 -1.846117 10.276093 2.341783 11.139164 -0.828039 9.65
6.781585 0.868179 4.136207 -0.112108 4.229146 -1.691666 5.478895 2.014829 6
1 160 62 0 0 0 6.368686 12.776318 9.278902 27.258095 31.653228 11.193173 8.6
15.403355 18.686872 5.154955 2.462658 9.005507 10.665297 5.778758 5.980476
1 150 71 0 0 0 7.423857 -12.492360 6.403663 3.495731 14.794488 -25.135752 17
0.949949 9.891383 -21.689480 14.849561 4.680573 26.699474 -3.194724 2.0144(
1 150 76 0 0 0 9.425358 27.227787 17.367401 119.814842 124.129635 16.556175
101.762878 105.219476 4.041209 1.400038 15.472573 16.053136 12.073079 7.28
1 152 27 0 0 0 10.362536 22.530897 20.412874 88.875732 93.983048 67.139397

Compare of two samples

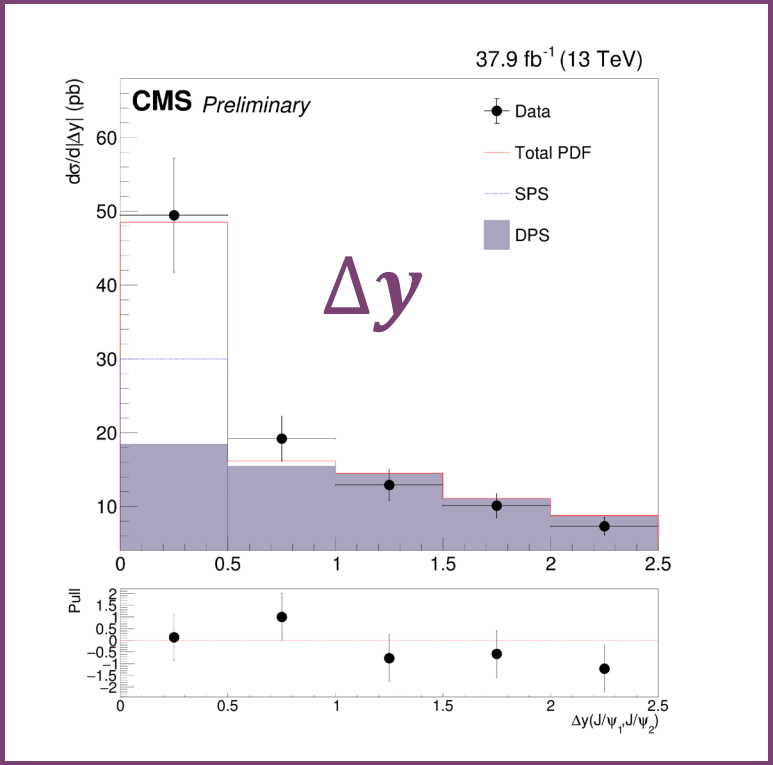


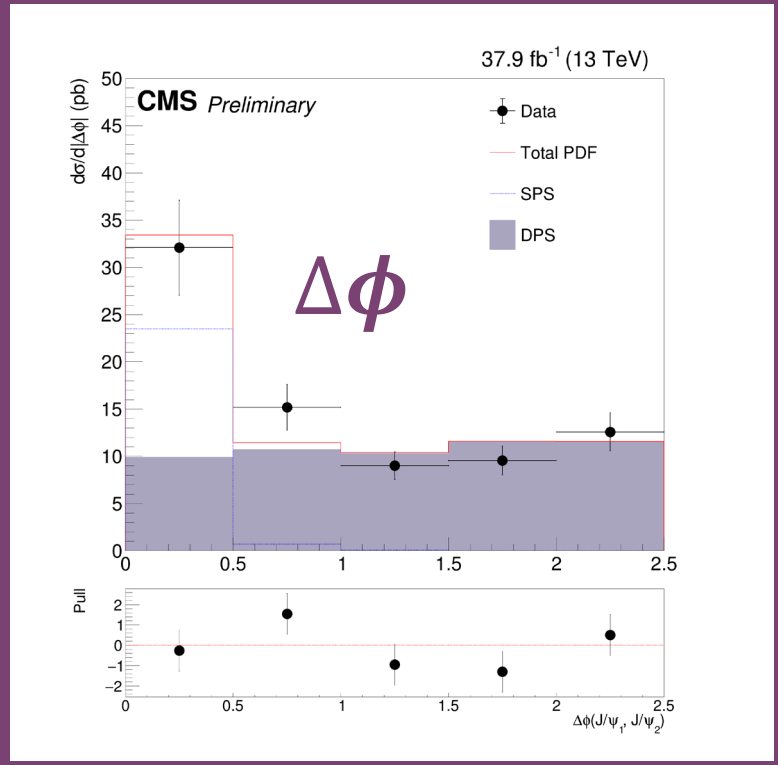


- Discrepancy can be noticed, but no back-to-back contribution is found in both samples

Compare of two samples

- Another template fit is applied using the HelicOnia SPS sample and the Pythia DPS sample





- $f_{DPS} = 0.69 \pm 0.05$
- Main result:
  - $f_{DPS} = 0.67 \pm 0.05(Stat.)^{+0.01}_{-0.03}(Sys.)$