



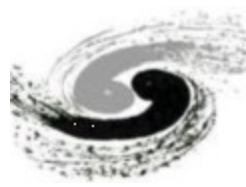
中国科学院高能物理研究所
Institute of High Energy Physics
Chinese Academy of Sciences



Double J/ψ cut number



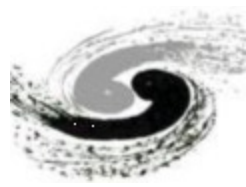
each cut



Cut	2016	2017
Total entries	85903	88355
mu cut(mu pt > 3.5, mu eta <2.4)	17569	23326
Jpsi cut(Jpsi pt>10, Jpsi eta <2)	10659	13398
trigger cut Jpsi mass cut	55091	53512



cut flow



Cut flow	2016	2017
Total entries	85903	88355
trigger cut and mass cut	55091	53512
mu cut&& trigger and mass cut	15040	20674
mu cut&& trigger mass cut && Jpsi cut	7290	9832



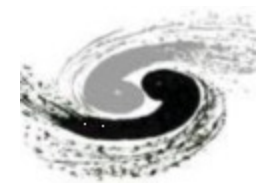
cut flow



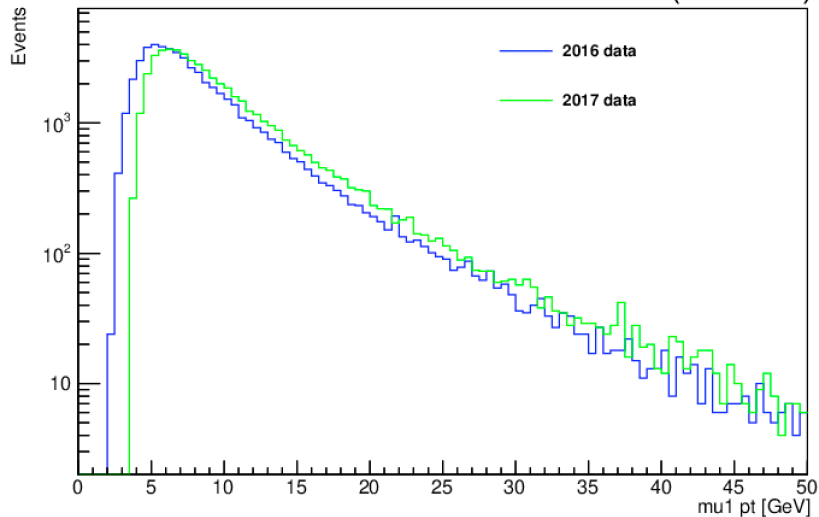
Cut flow	2016	2017
Total entries	85903	88355
trigger cut	63073	61116
mu cut(>3.5GeV)&& trigger cut	16614	22802
mu cut&& trigger cut && Jpsi cut	8082	10866



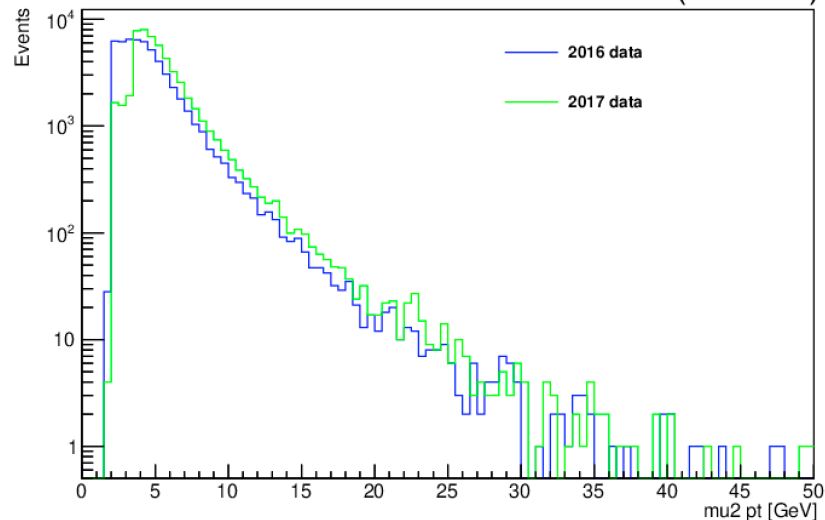
Data



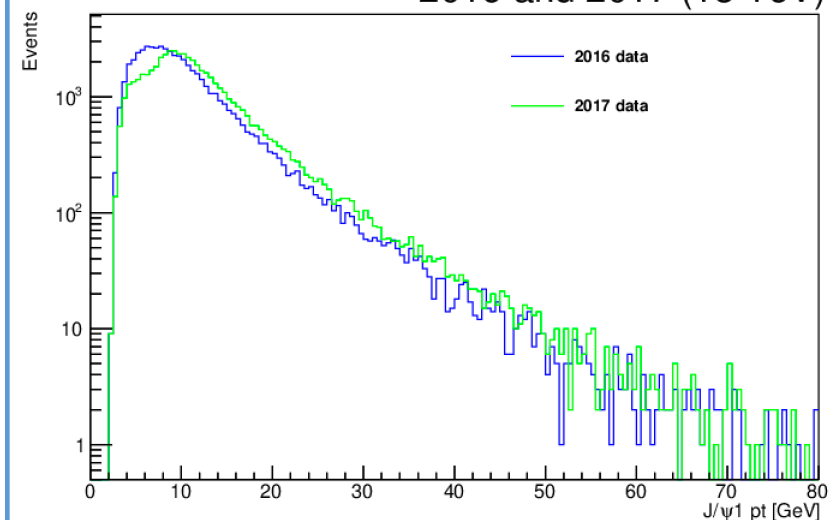
2016 and 2017 (13 TeV)



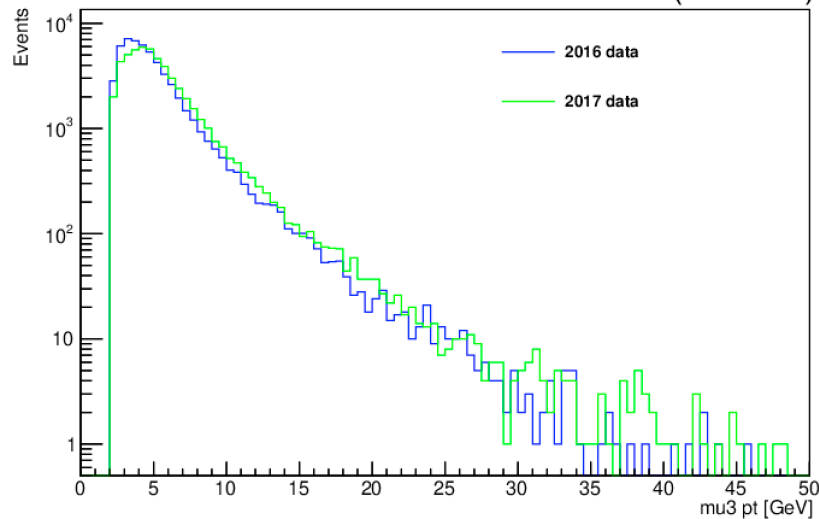
2016 and 2017 (13 TeV)



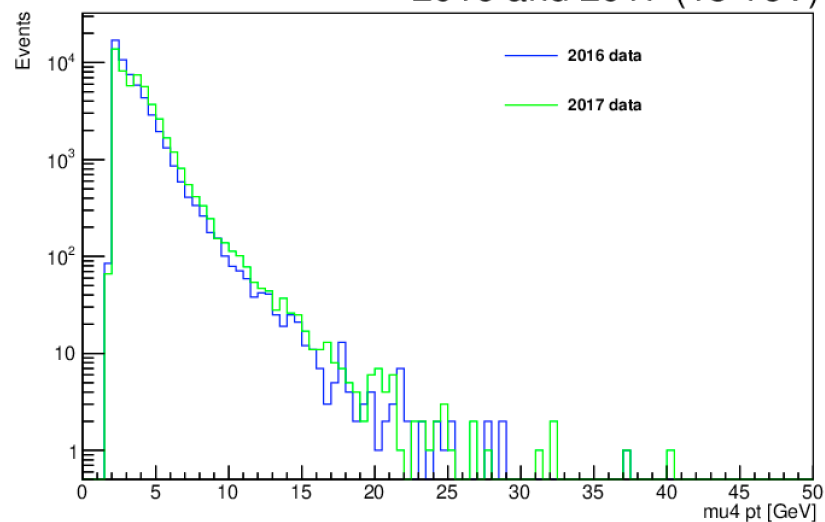
2016 and 2017 (13 TeV)



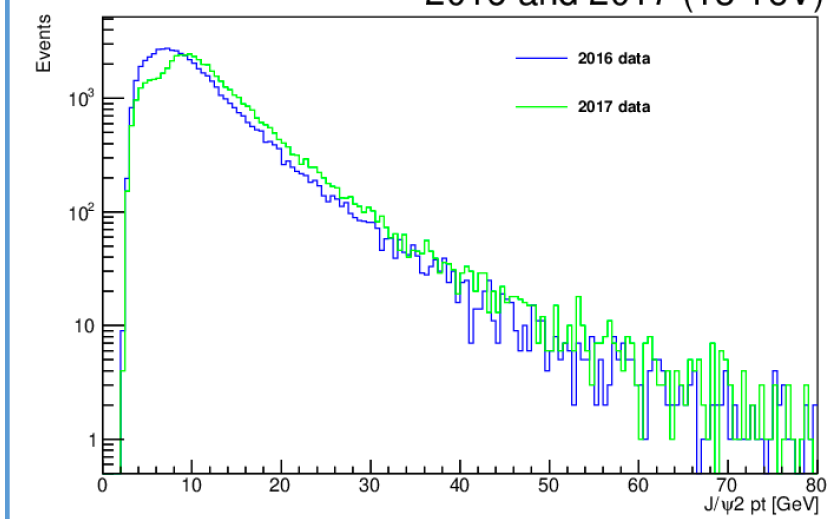
2016 and 2017 (13 TeV)



2016 and 2017 (13 TeV)

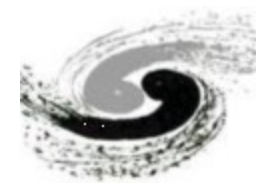


2016 and 2017 (13 TeV)

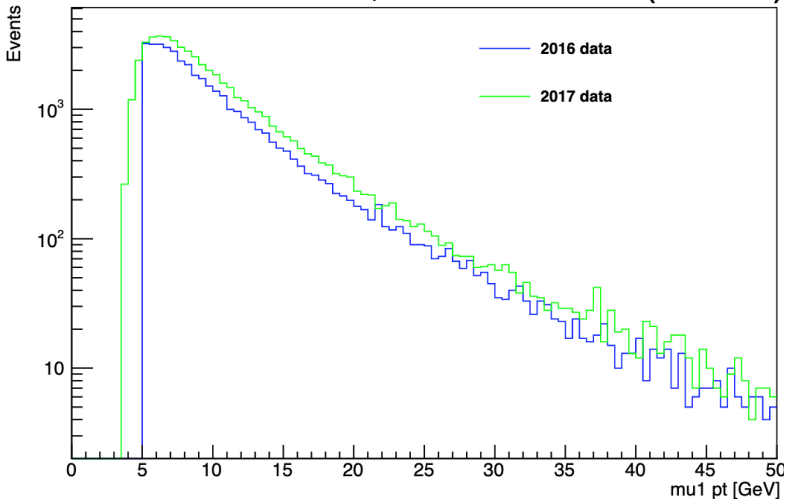




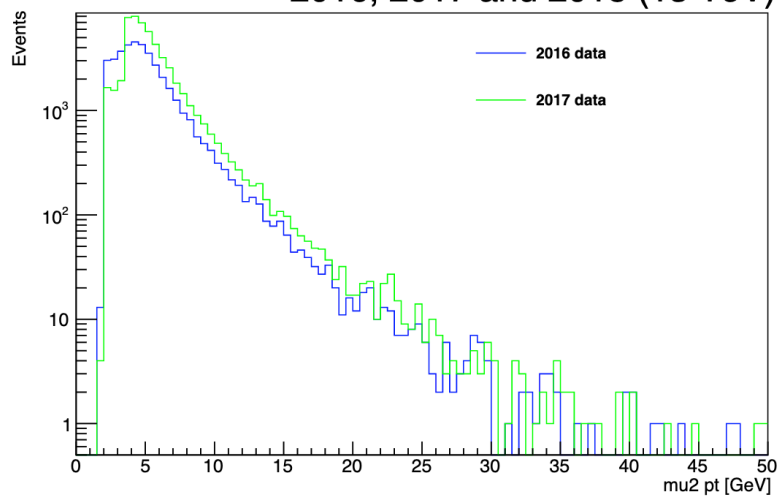
Data



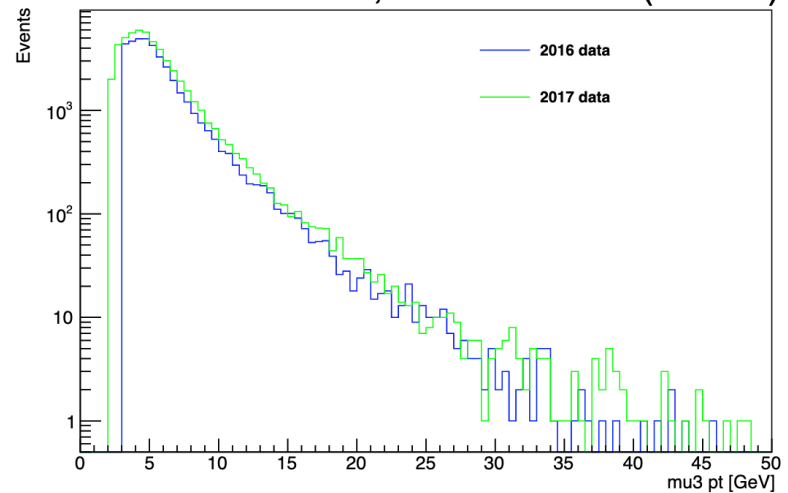
2016, 2017 and 2018 (13 TeV)



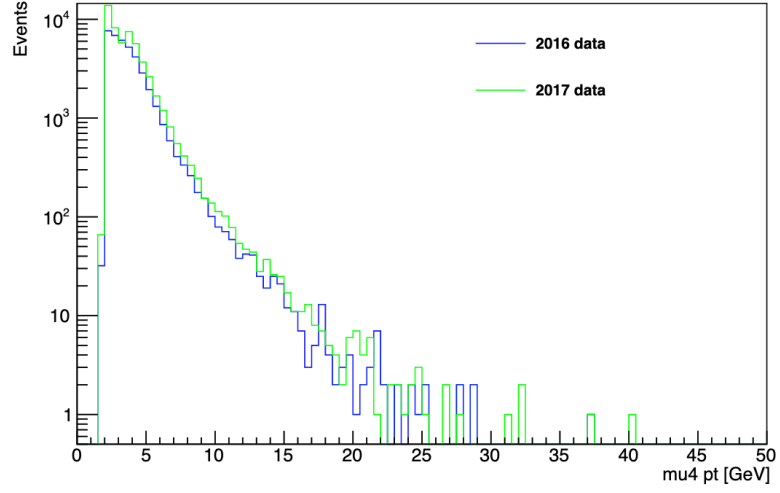
2016, 2017 and 2018 (13 TeV)



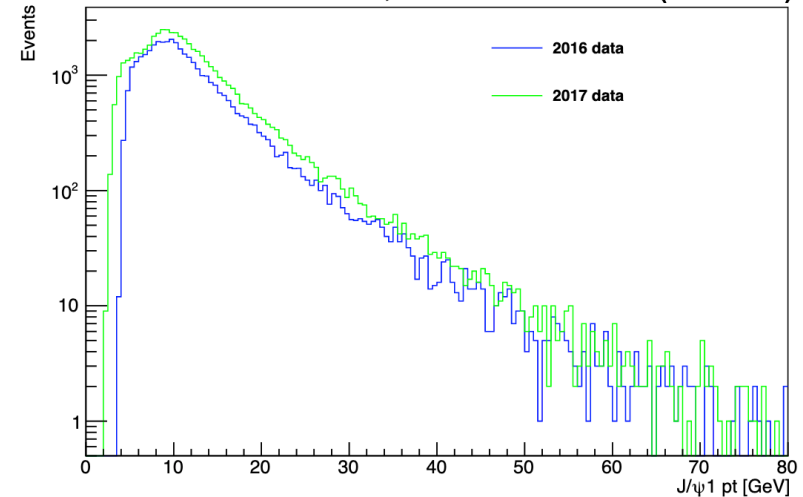
2016, 2017 and 2018 (13 TeV)



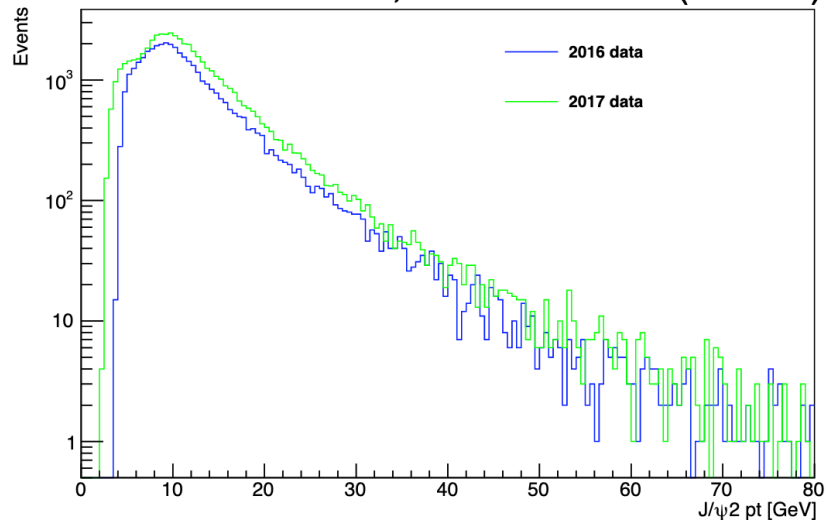
2016, 2017 and 2018 (13 TeV)



2016, 2017 and 2018 (13 TeV)



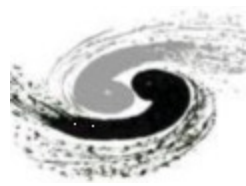
2016, 2017 and 2018 (13 TeV)



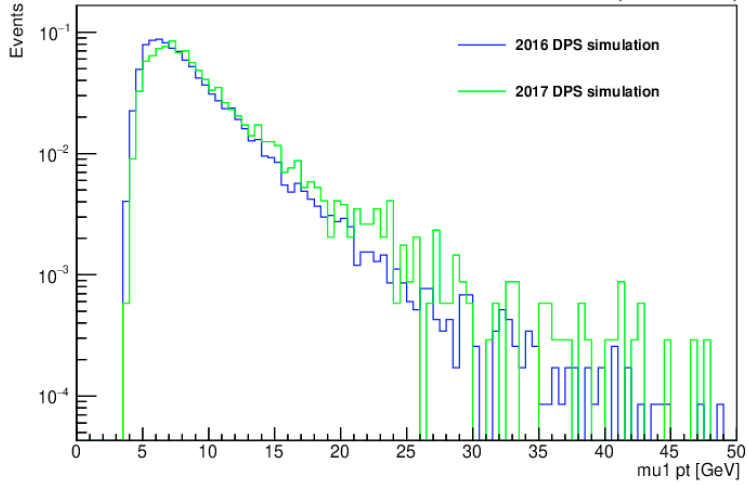
leading mu pt >5GeV, 2nd leading mu pt >3GeV



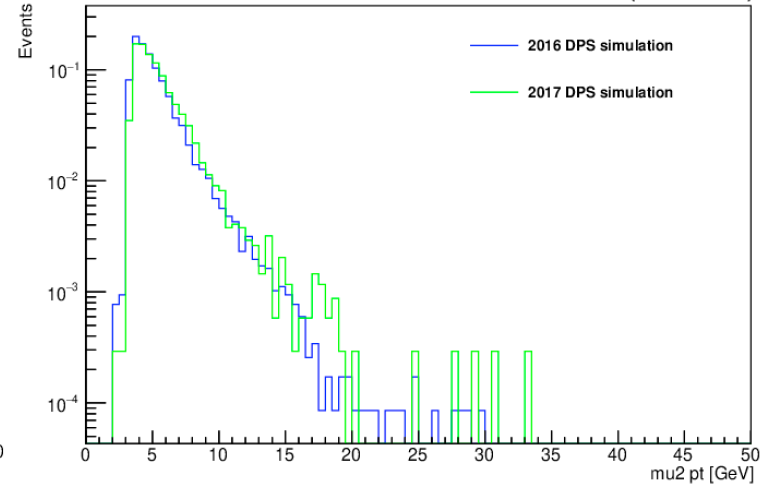
MC(DPS)



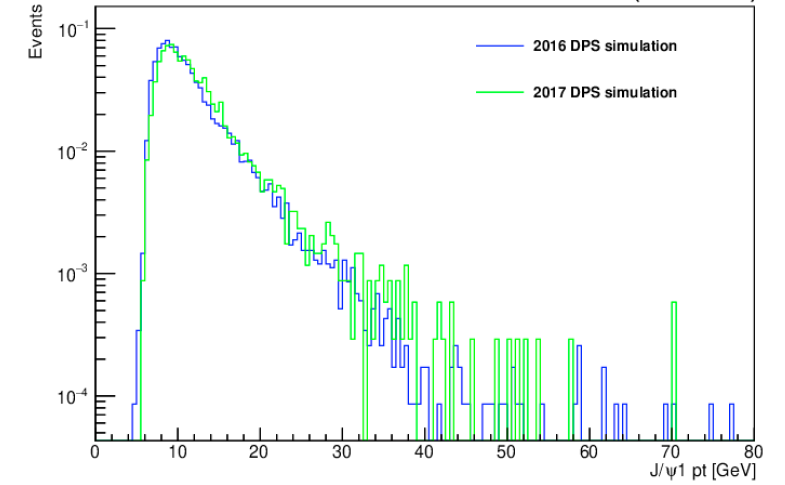
2016 and 2017 (13 TeV)



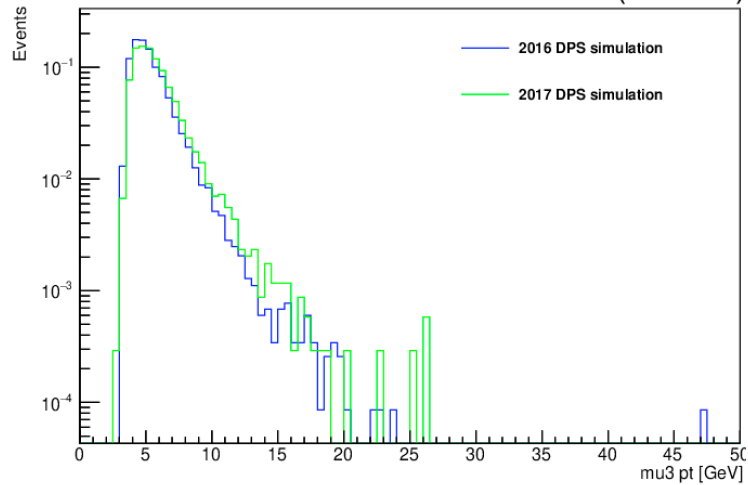
2016 and 2017 (13 TeV)



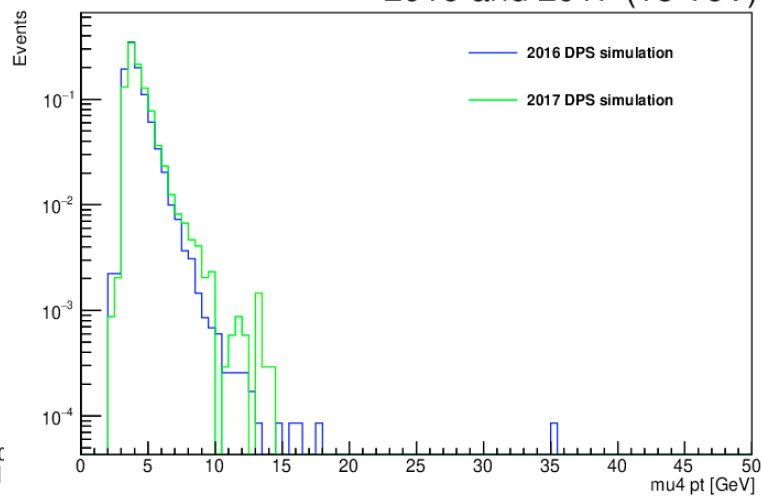
2016 and 2017 (13 TeV)



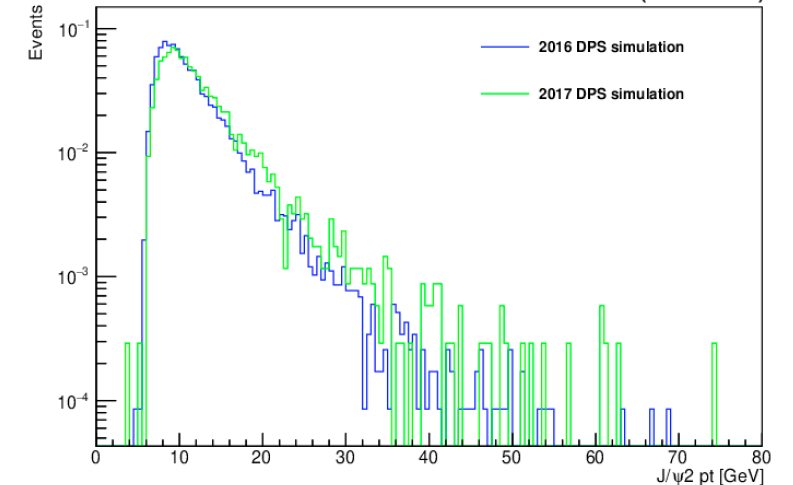
2016 and 2017 (13 TeV)



2016 and 2017 (13 TeV)

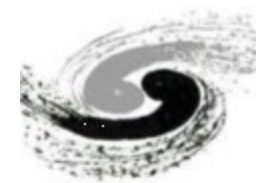


2016 and 2017 (13 TeV)

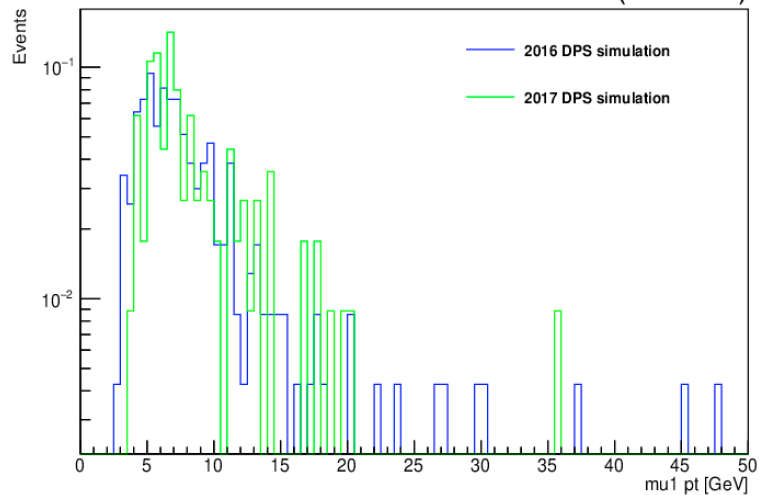




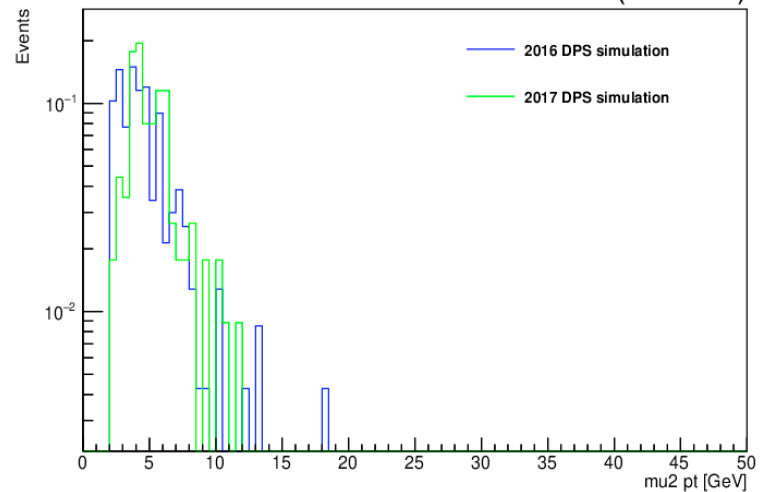
MC(DPS) official sample



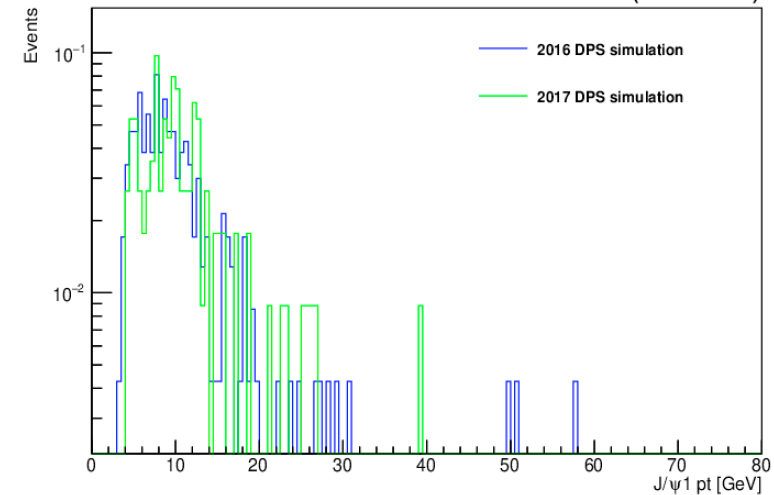
2016 and 2017 (13 TeV)



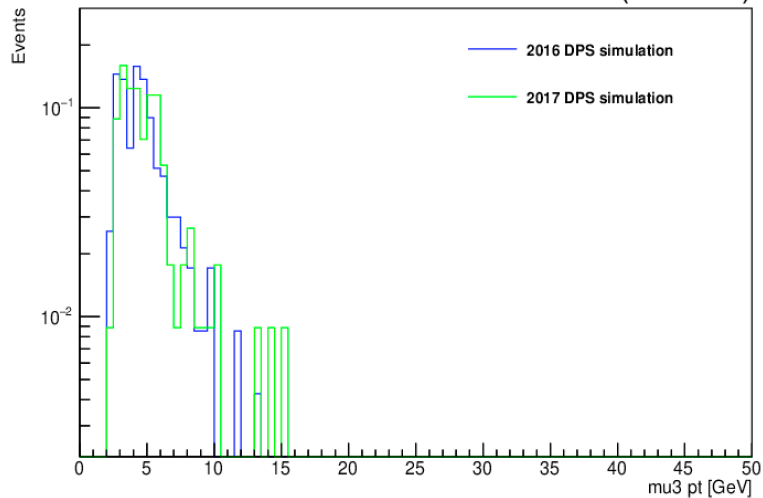
2016 and 2017 (13 TeV)



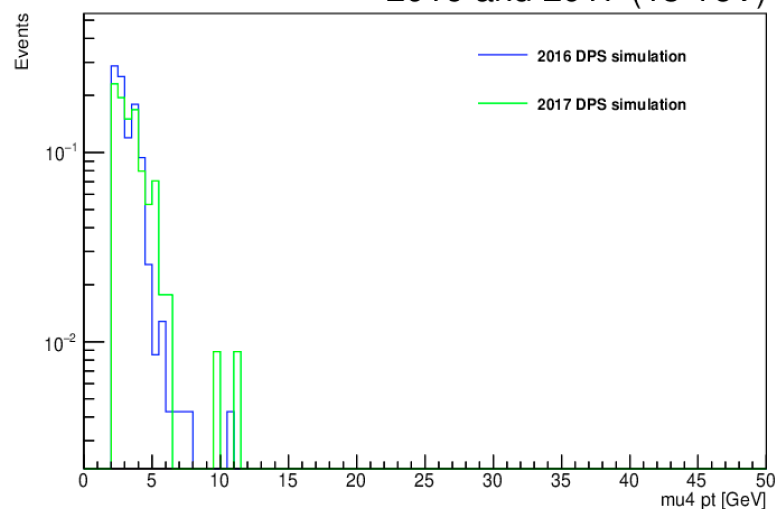
2016 and 2017 (13 TeV)



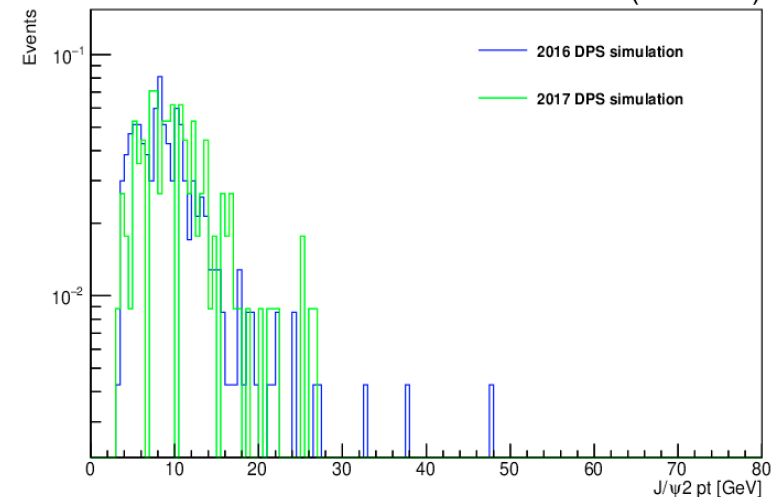
2016 and 2017 (13 TeV)



2016 and 2017 (13 TeV)

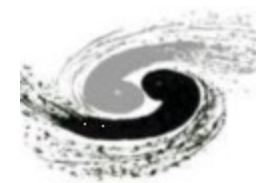


2016 and 2017 (13 TeV)

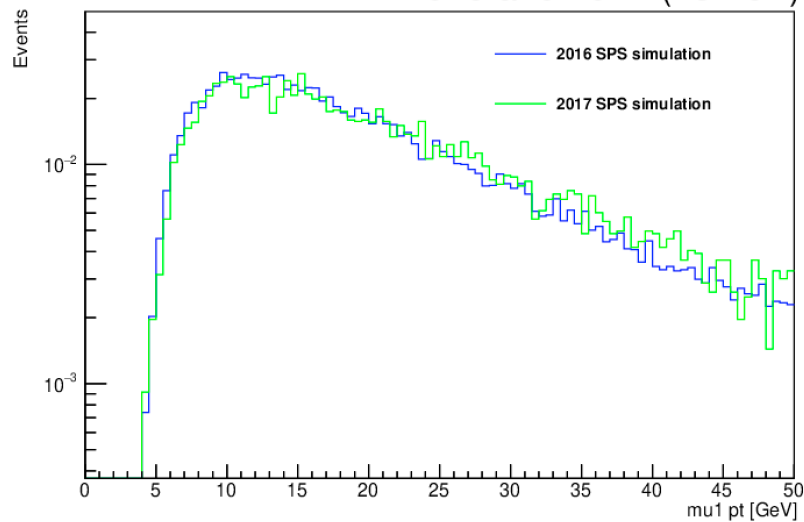




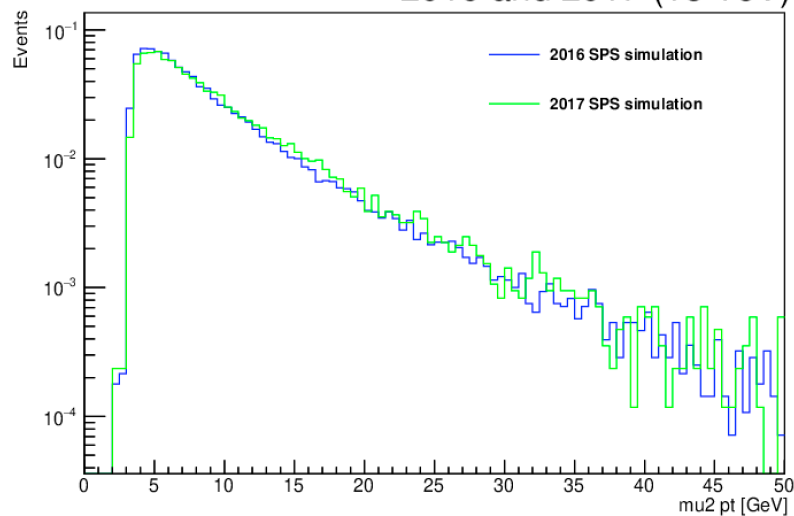
MC(SPS)



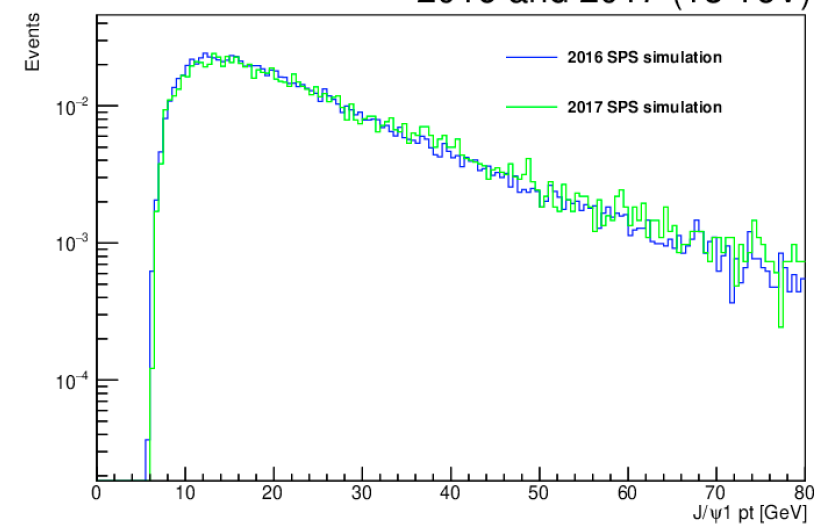
2016 and 2017 (13 TeV)



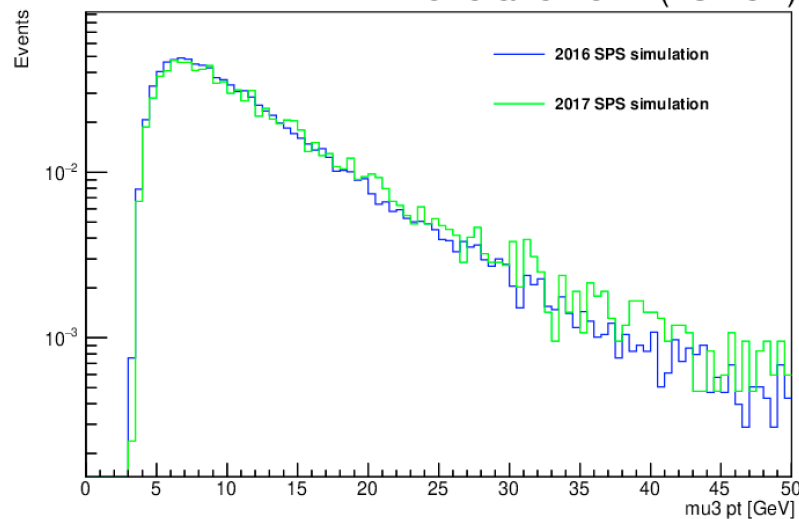
2016 and 2017 (13 TeV)



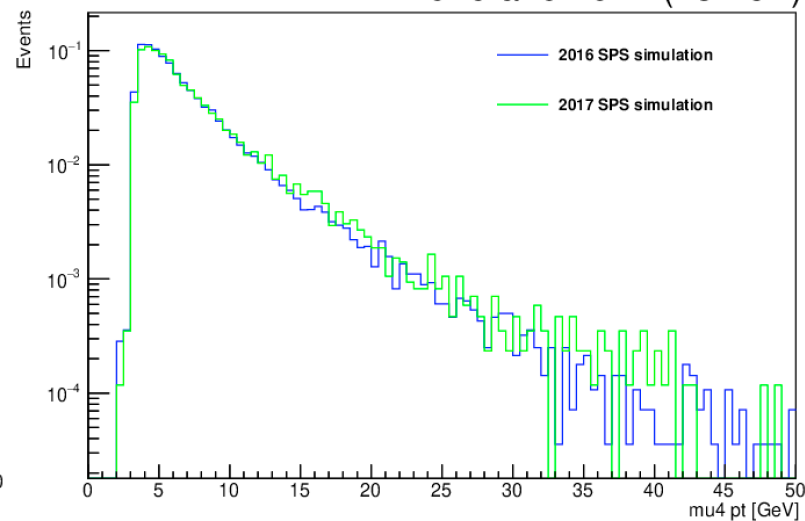
2016 and 2017 (13 TeV)



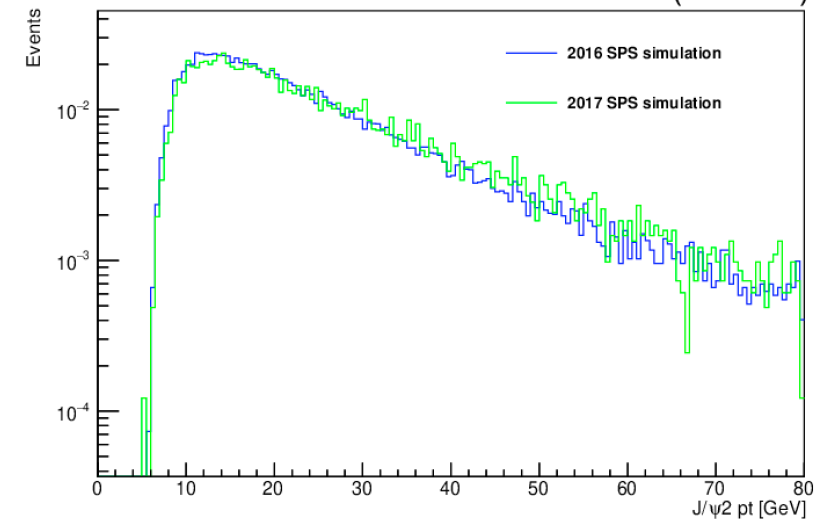
2016 and 2017 (13 TeV)



2016 and 2017 (13 TeV)

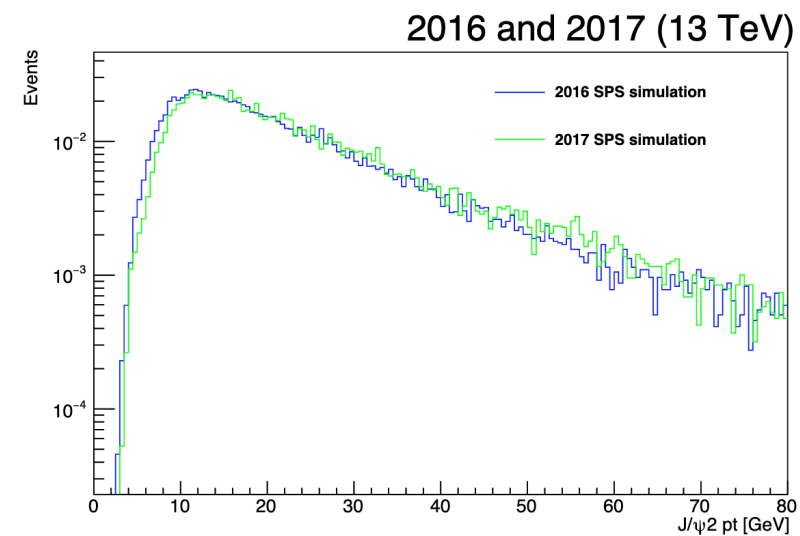
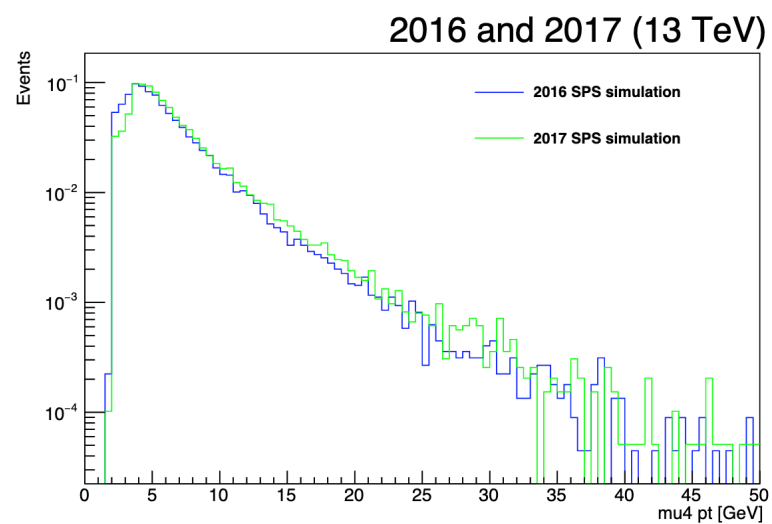
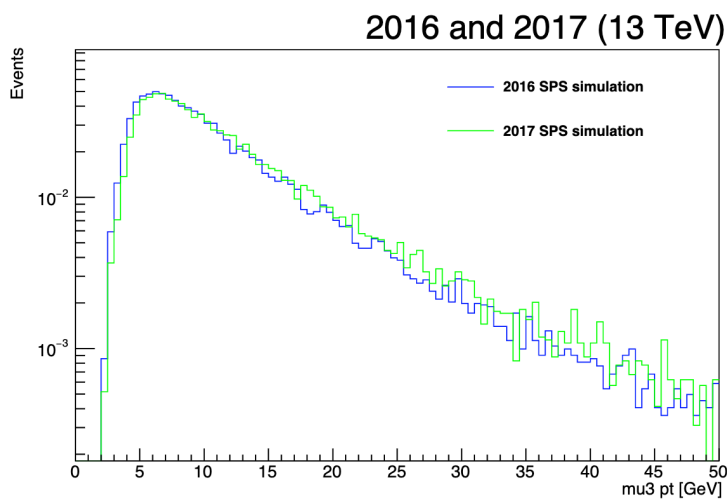
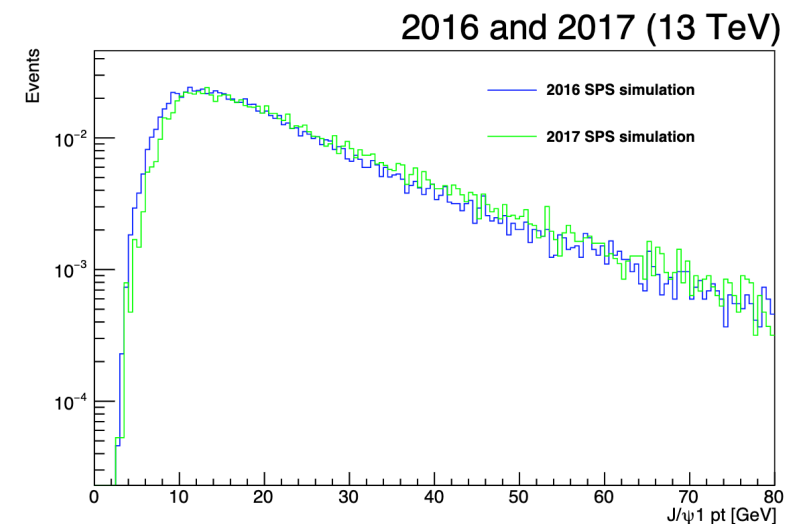
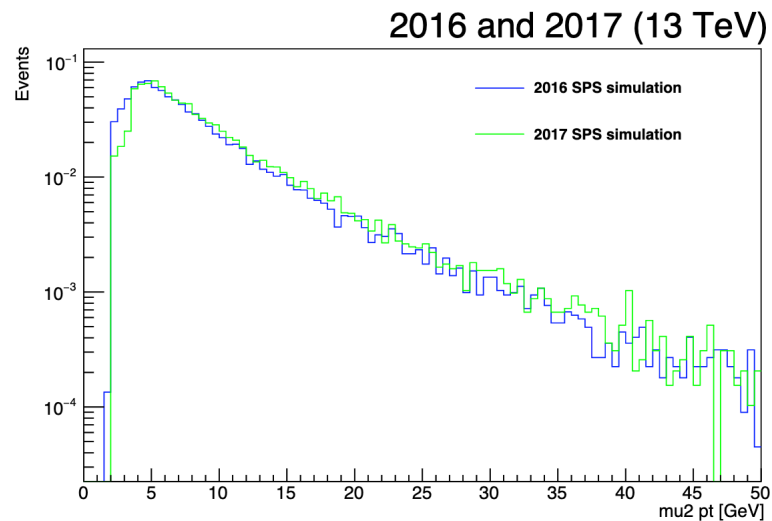
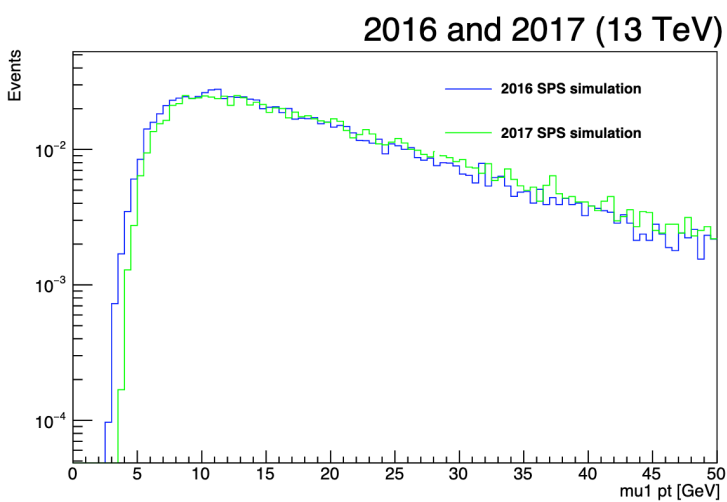
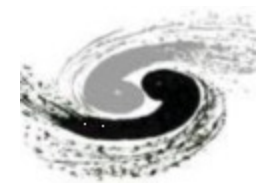


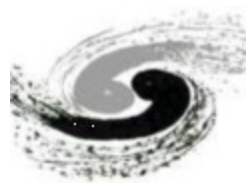
2016 and 2017 (13 TeV)



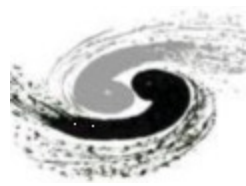


MC(SPS) official sample





Cut flow	2016	2017
Total entries	85903	88355
trigger cut and mass cut	55091	53512
mu cut(leading mu pt >5)&& trigger and mass cut	14712	20235
mu cut&& trigger mass cut && Jpsi cut	7290	9832

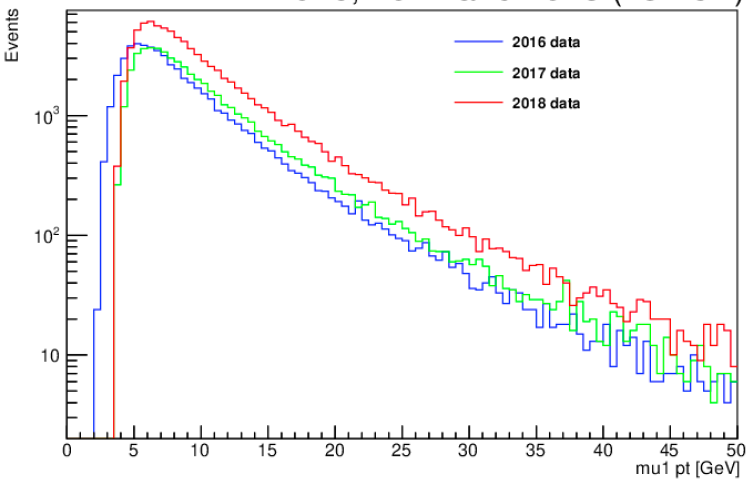


Cut flow	2016	2017
Total entries	85903	88355
trigger cut and mass cut	55091	53512
mu cut(all mu pt >5)&& trigger and mass cut	3713	5082
mu cut&& trigger mass cut && Jpsi cut	3077	4121

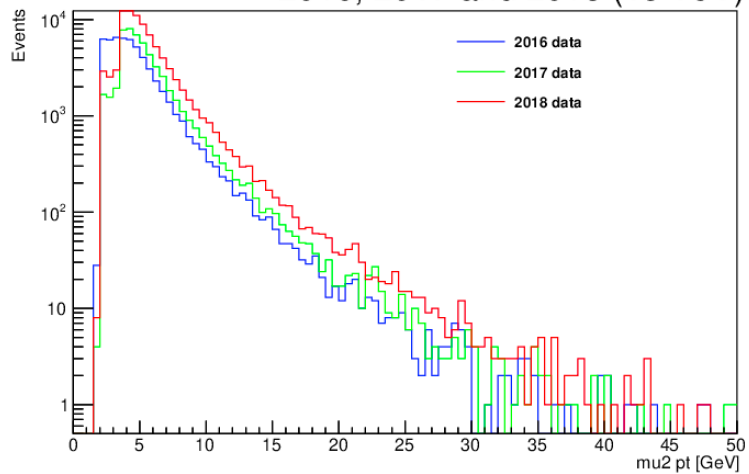


Cut flow	2016	2017
Total entries	85903	88355
trigger cut and mass cut	55091	53512
mu cut(mu pt >2)&& trigger and mass cut	54953	53424
mu cut&& trigger mass cut && Jpsi cut	9426	12140
Cross section	11.50+-0.36pb	12.94+-0.36

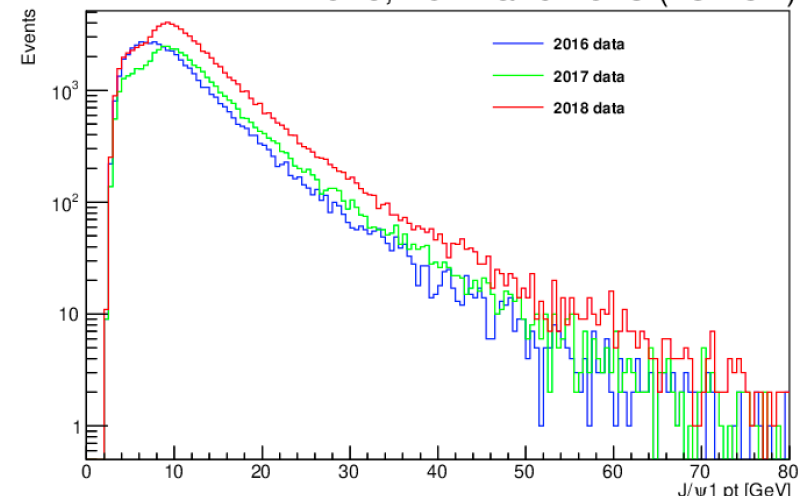
2016, 2017 and 2018 (13 TeV)



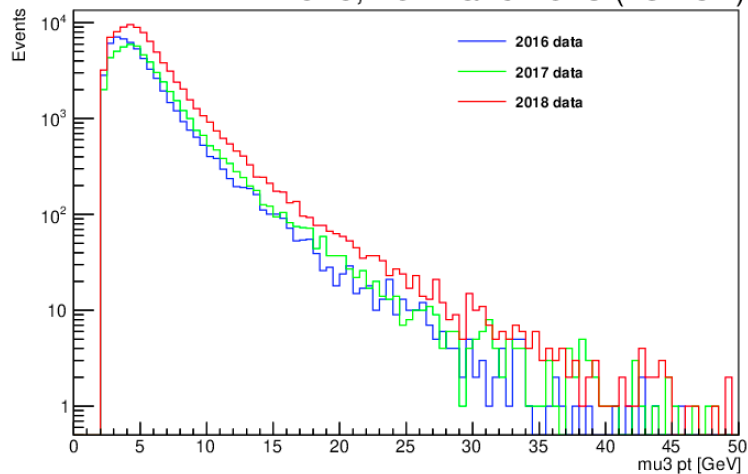
2016, 2017 and 2018 (13 TeV)



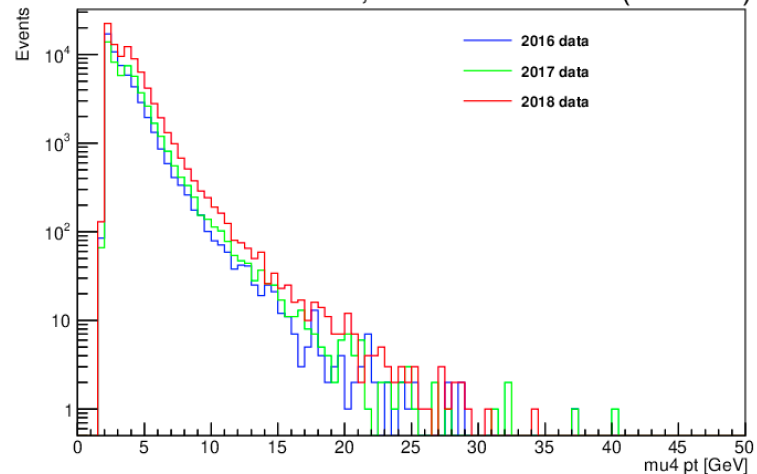
2016, 2017 and 2018 (13 TeV)



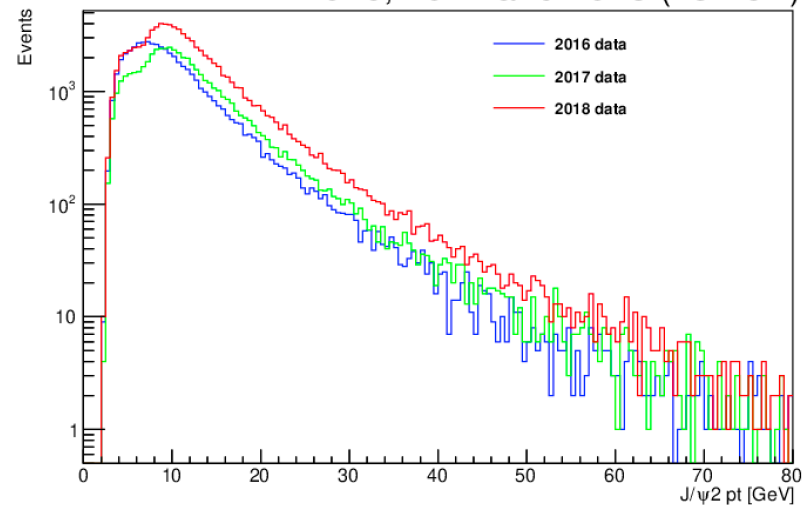
2016, 2017 and 2018 (13 TeV)



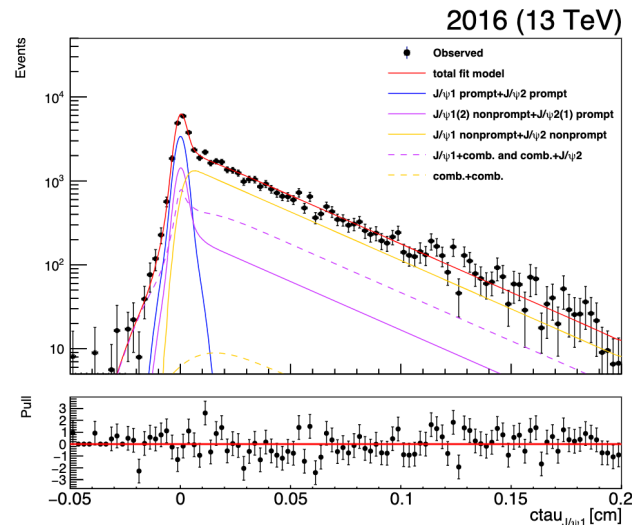
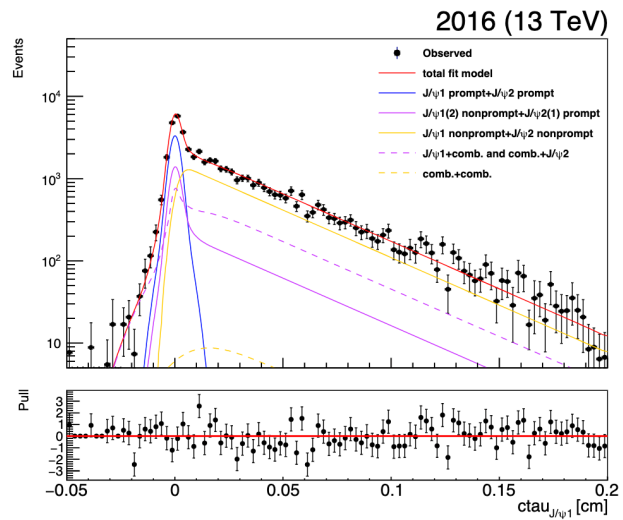
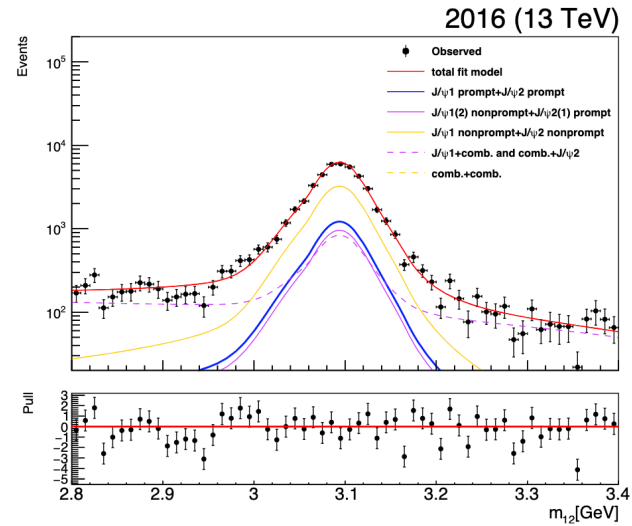
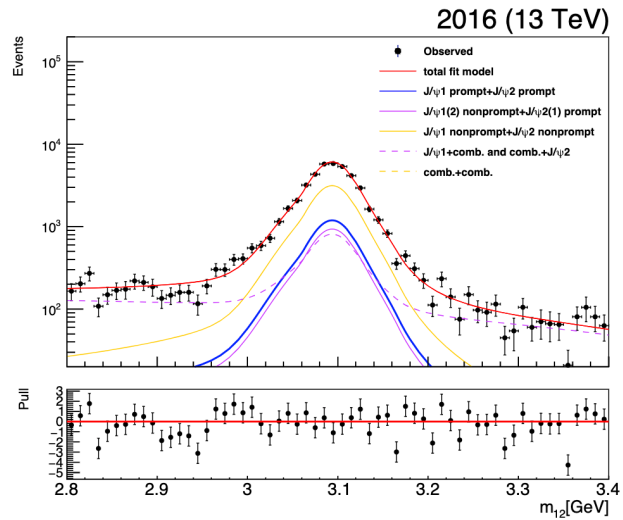
2016, 2017 and 2018 (13 TeV)



2016, 2017 and 2018 (13 TeV)

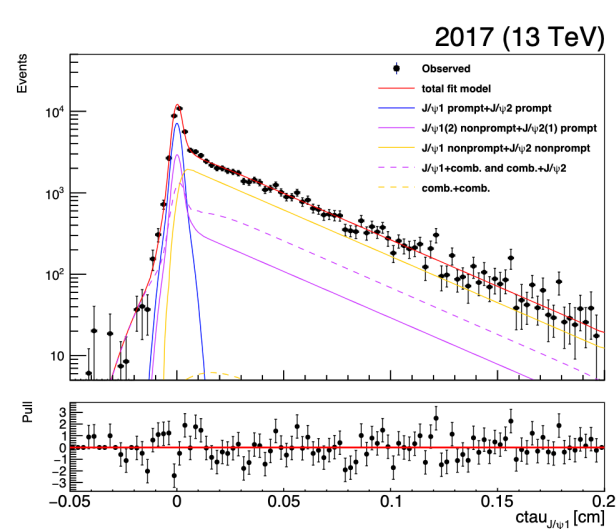
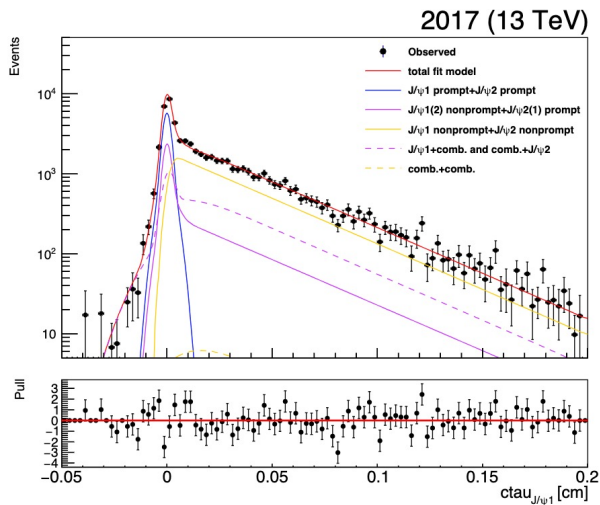
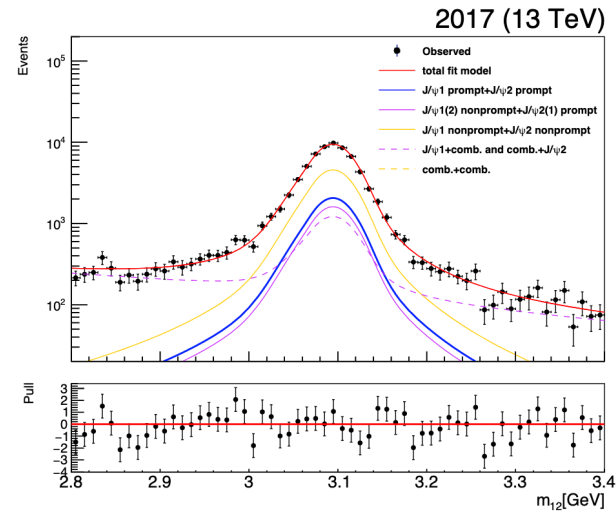
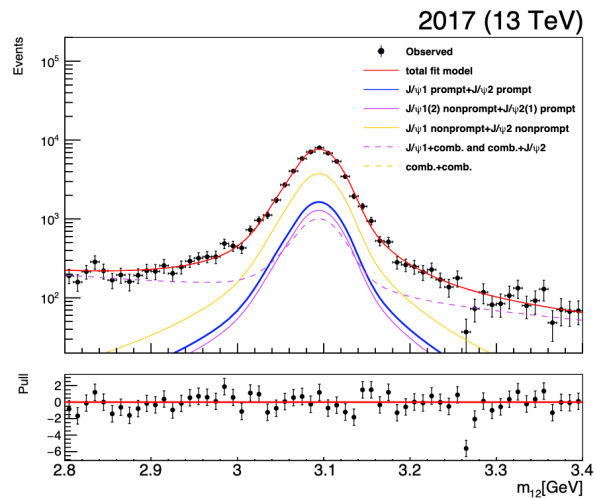


- 2018 data choose minimal chi2 Jpsi pair



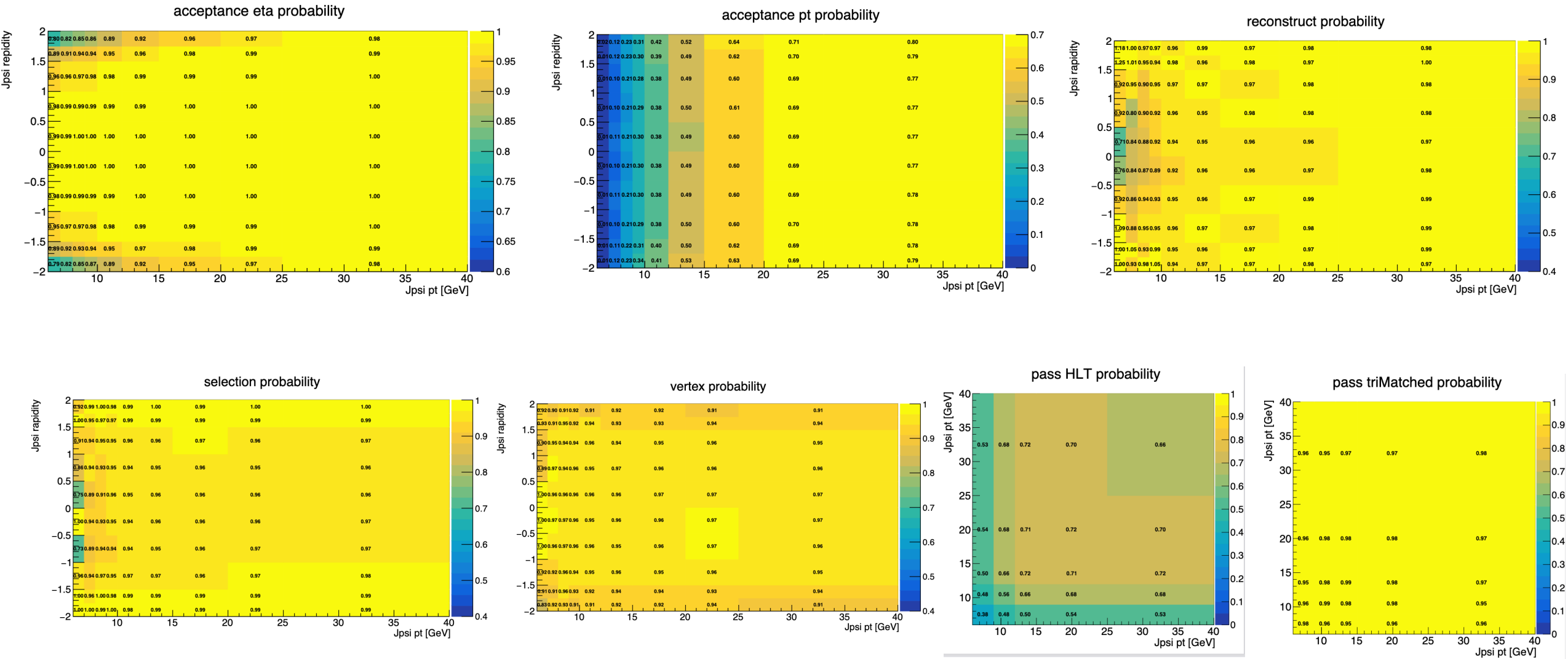
$68.32 \pm 2.60 \text{ pb}$

$69.72 \pm 2.63 \text{ pb}$



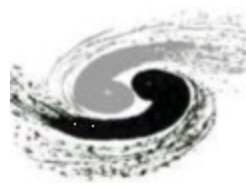
$91.36 \pm 2.98 \text{ pb}$

$117.22 \pm 3.62 \text{ pb}$

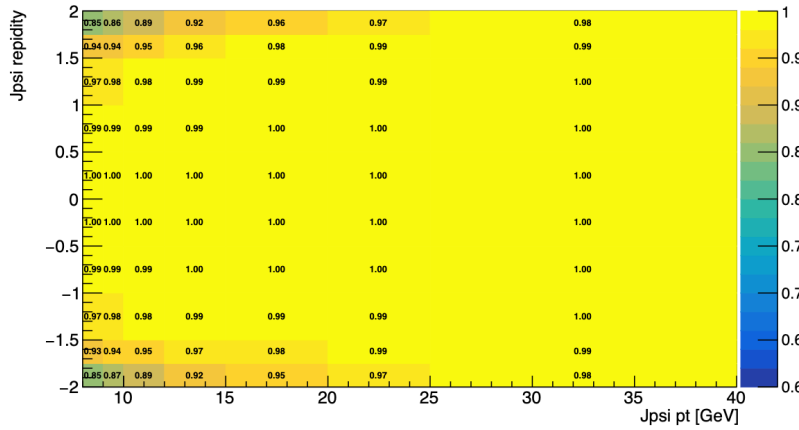




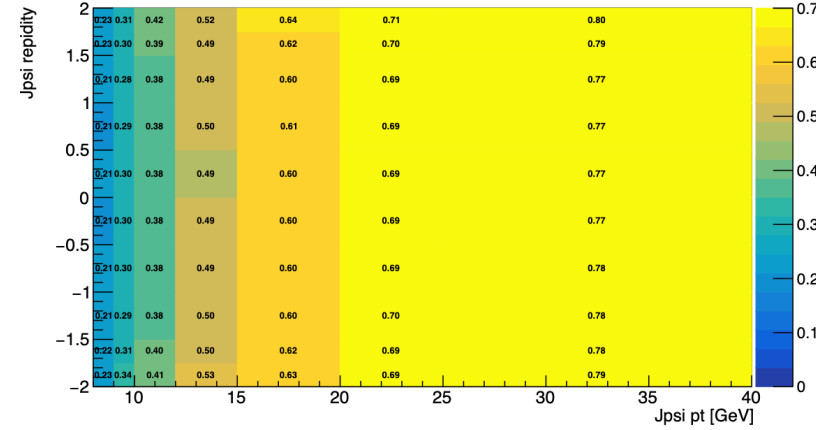
2017(old)



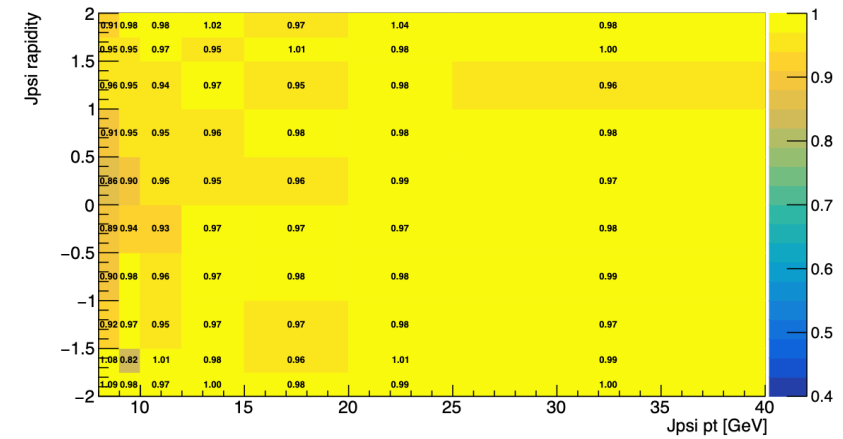
acceptance eta probability



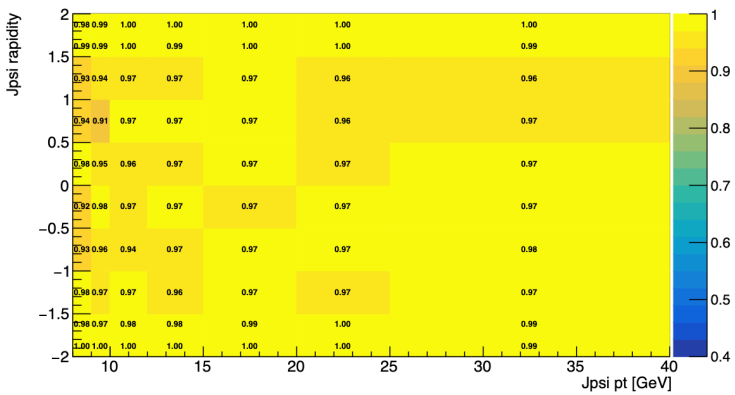
acceptance pt probability



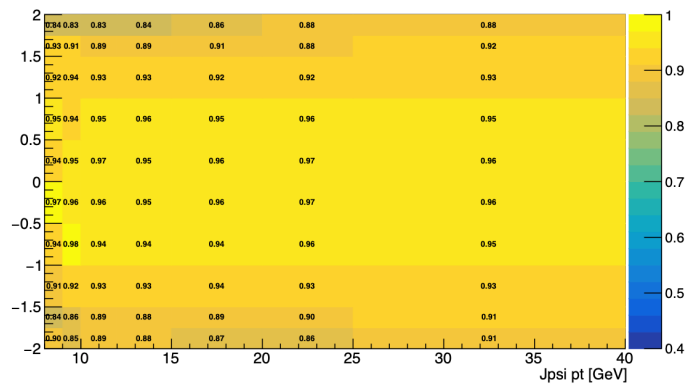
reconstruct probability



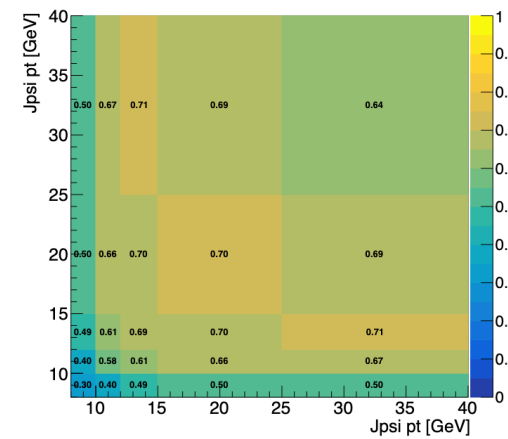
selection probability



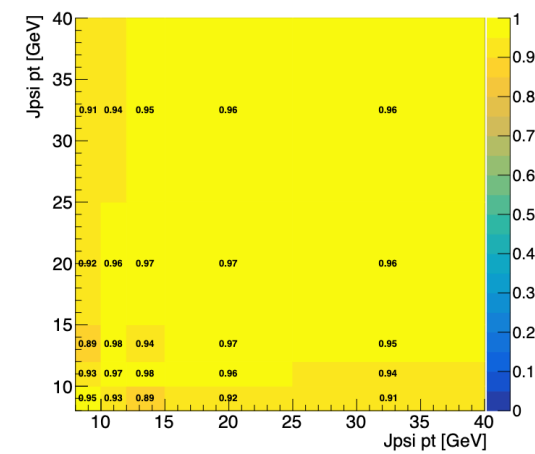
vertex probability



pass HLT probability



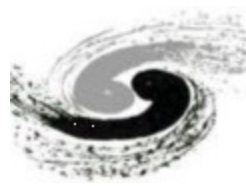
pass triMatched probability



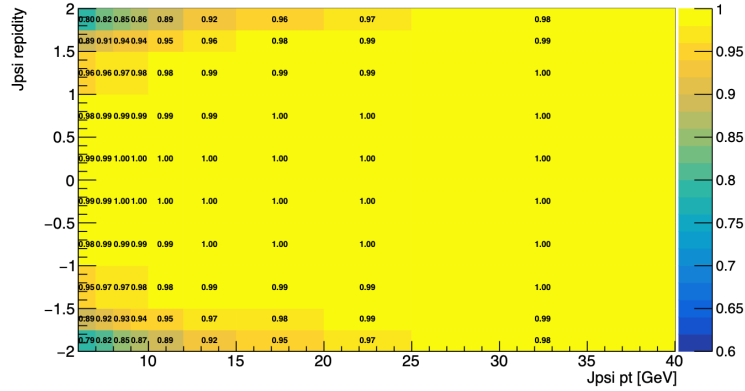
• 1



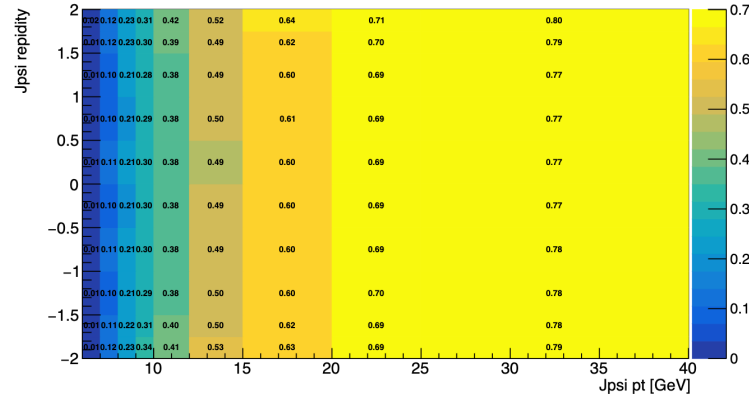
2017(new) official



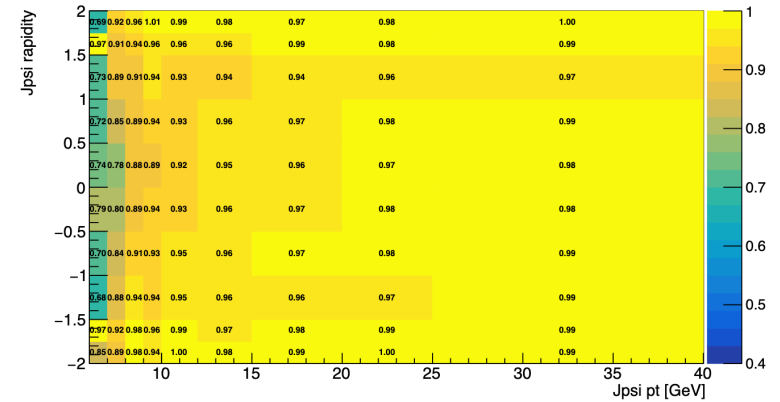
acceptance eta probability



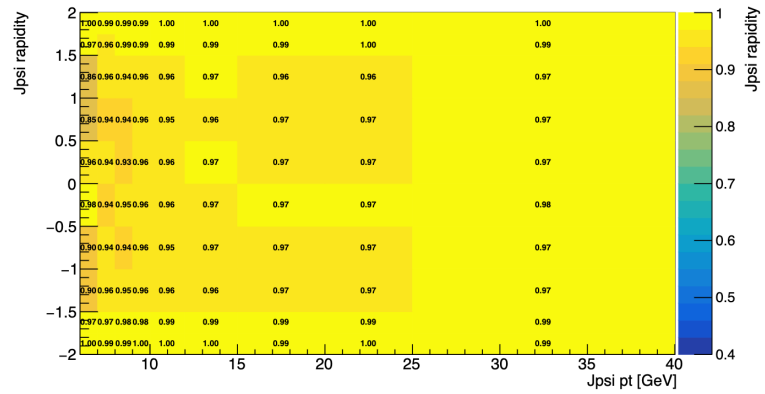
acceptance pt probability



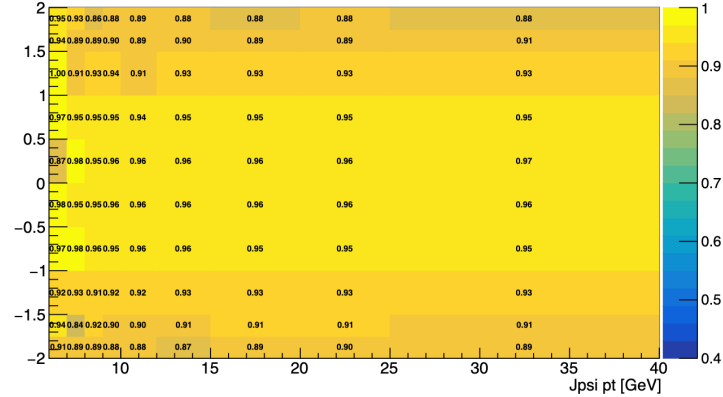
reconstruct probability



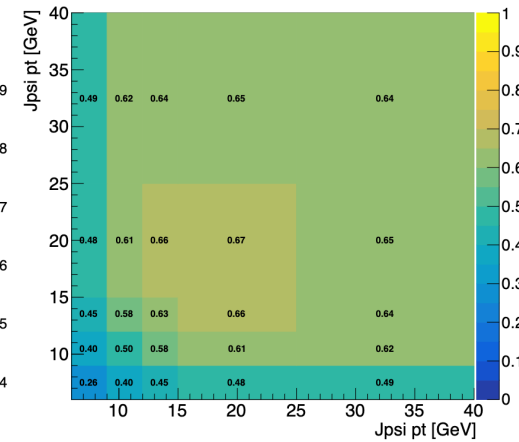
selection probability



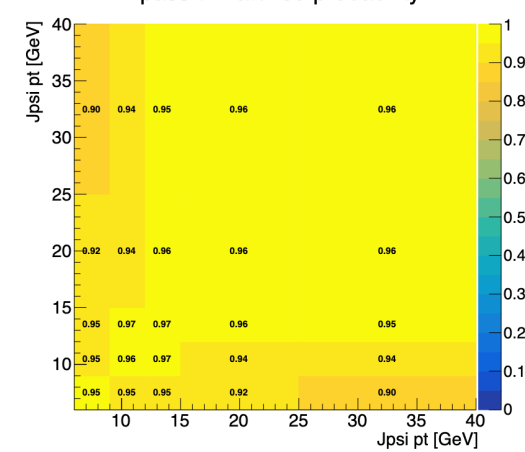
vertex probability



pass HLT probability



pass triMatched probability

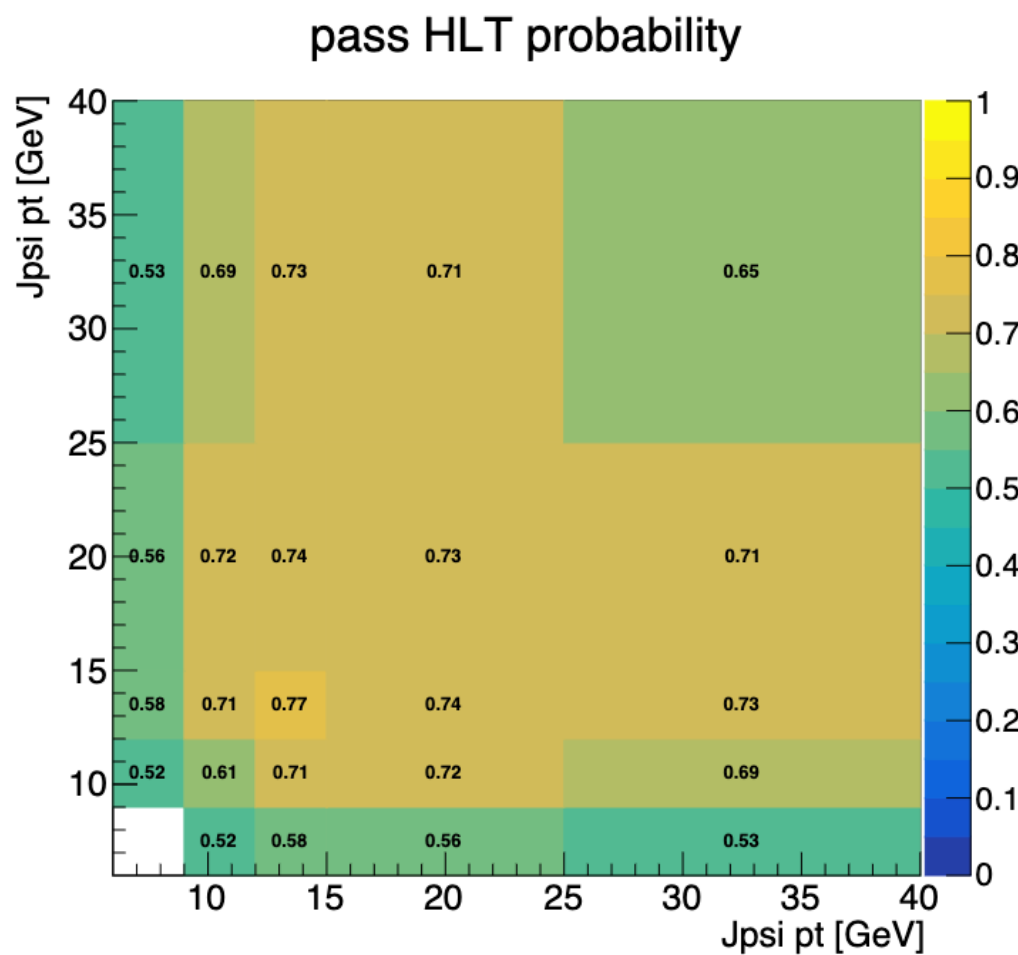




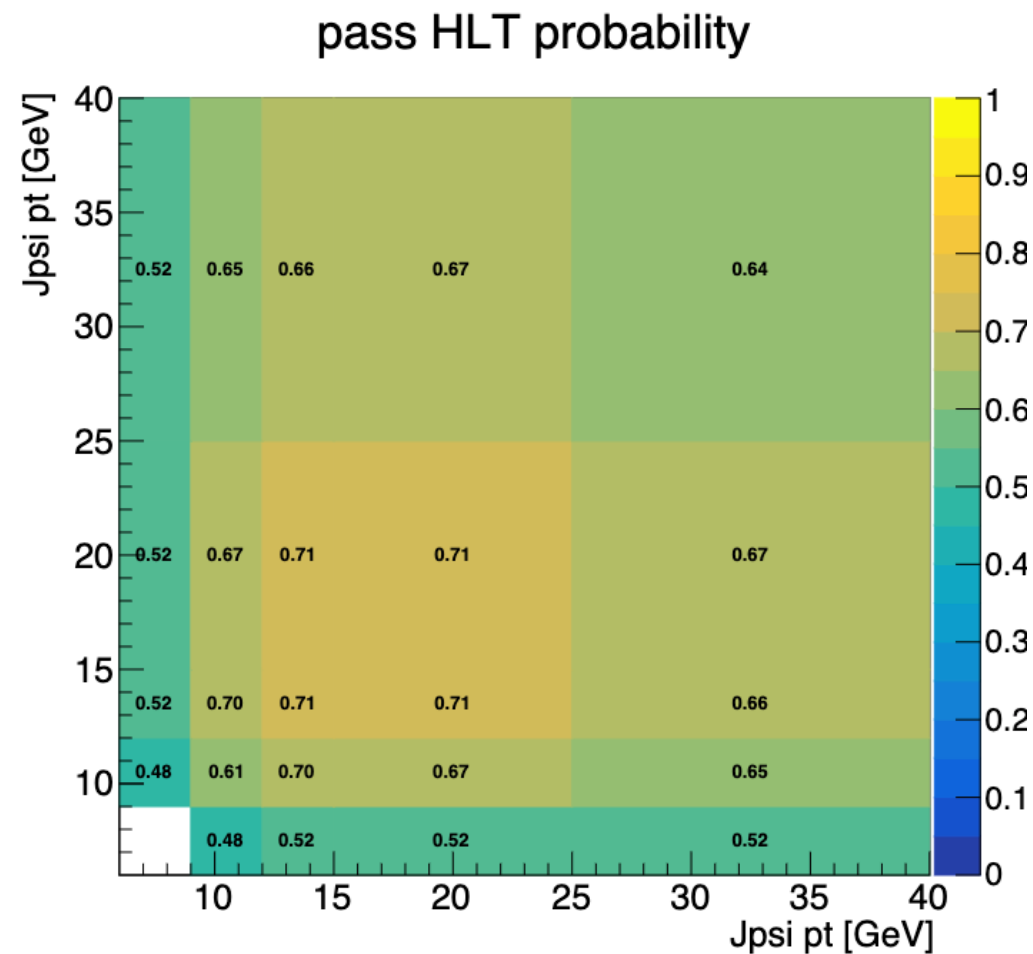
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Institute of High Energy Physics
Chinese Academy of Sciences



2017



Our sample

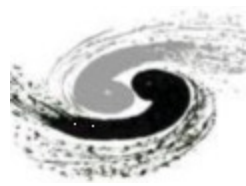


official sample

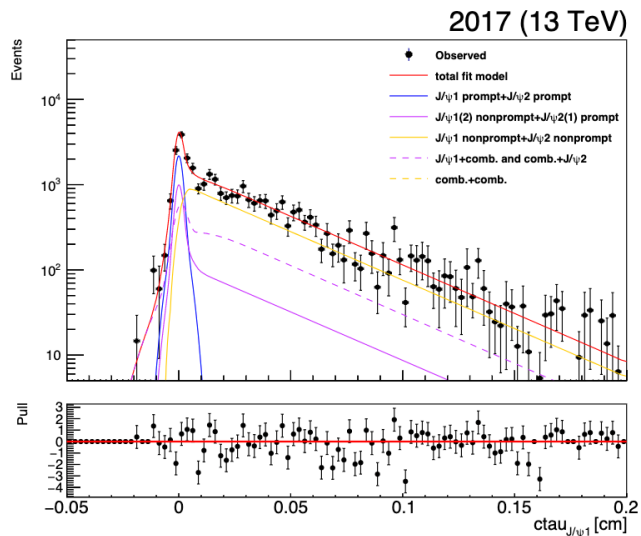
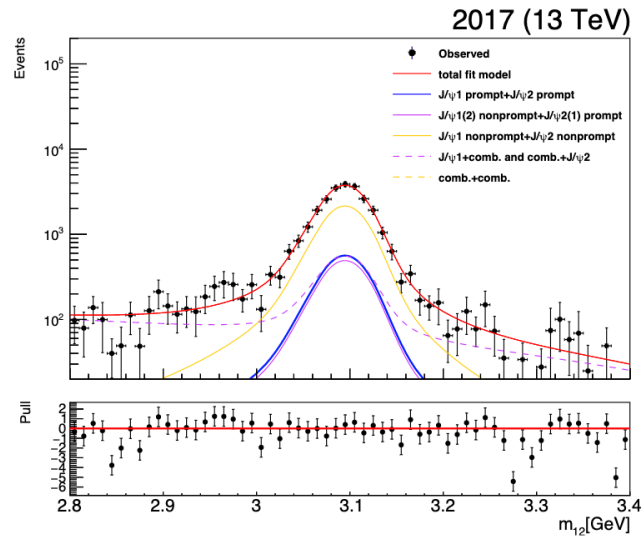
All mu pt > 5.5GeV Jpsi_pt>12



2017



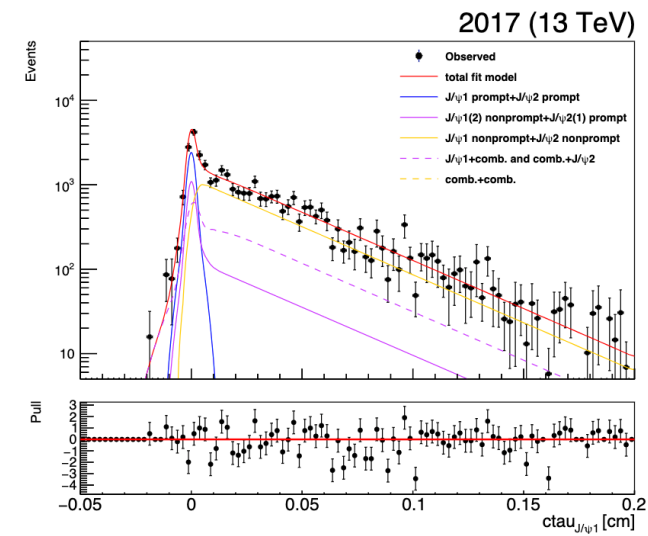
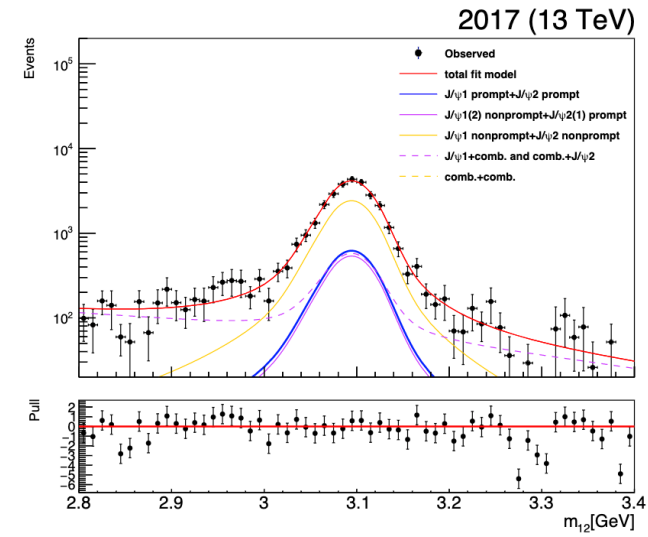
Our sample



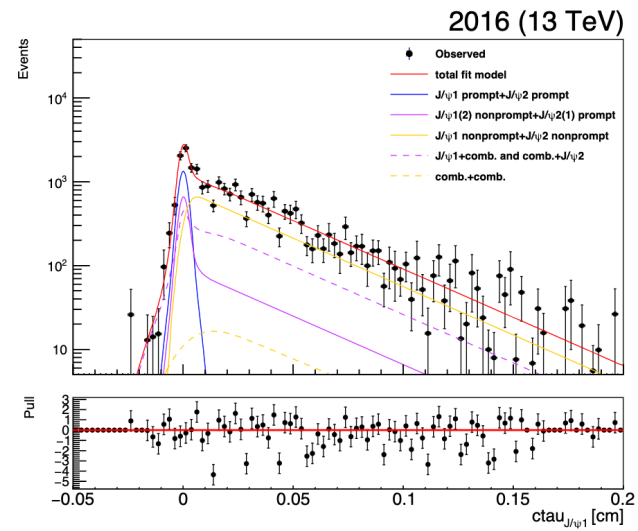
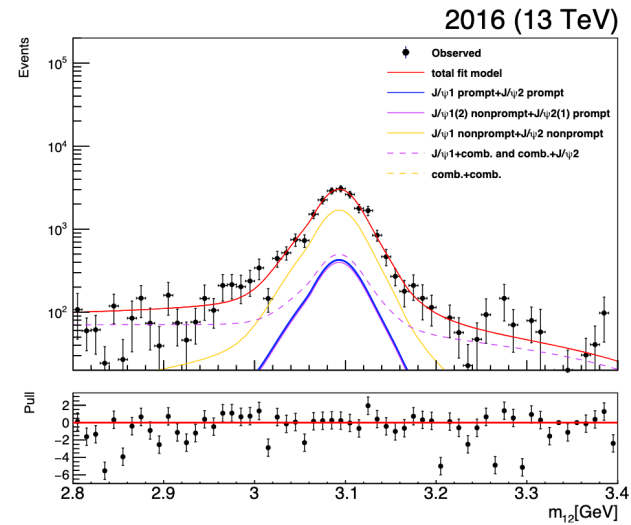
$31.13 \pm 2.76 \text{ pb}$

official sample

All mu pt > 5.5 GeV
 J_{ψ} pt > 12 GeV

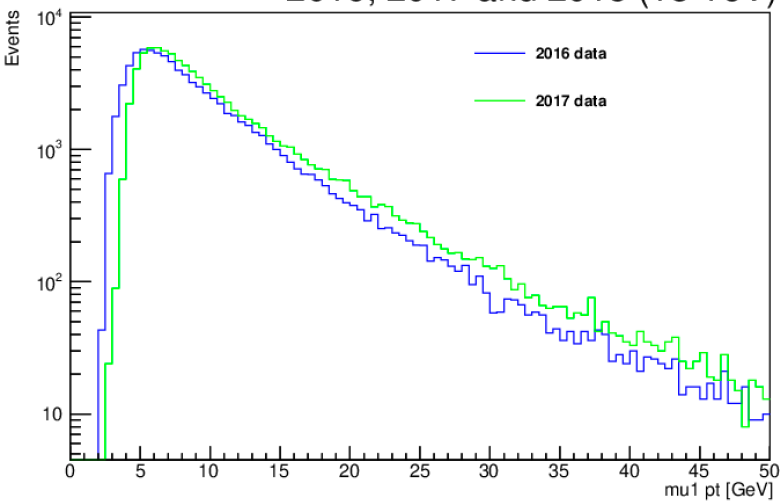


$34.68 \pm 2.94 \text{ pb}$

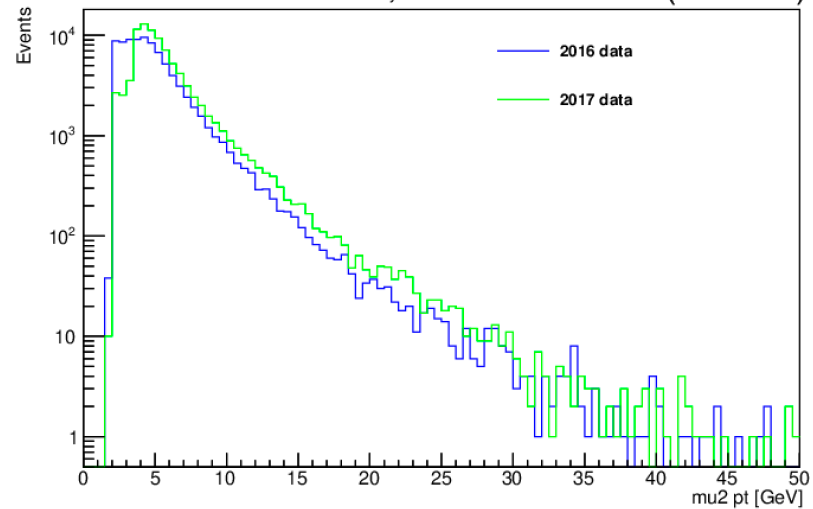


$23.21 \pm 2.34 \text{ pb}$

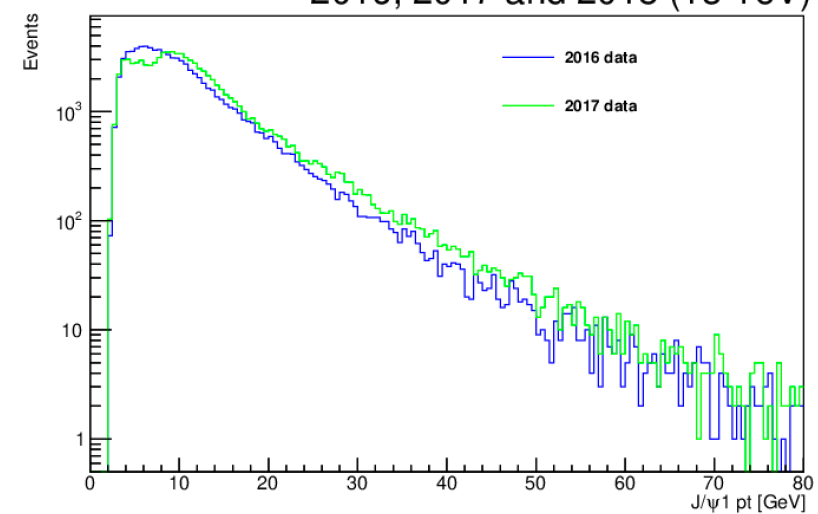
2016, 2017 and 2018 (13 TeV)



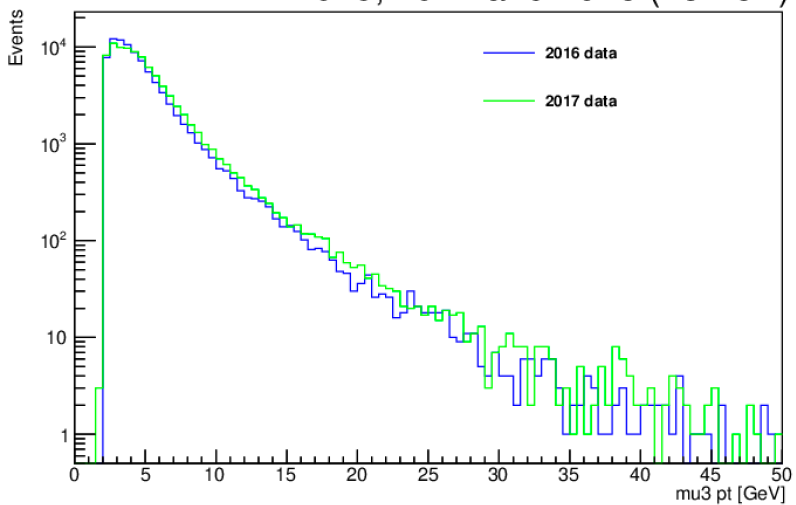
2016, 2017 and 2018 (13 TeV)



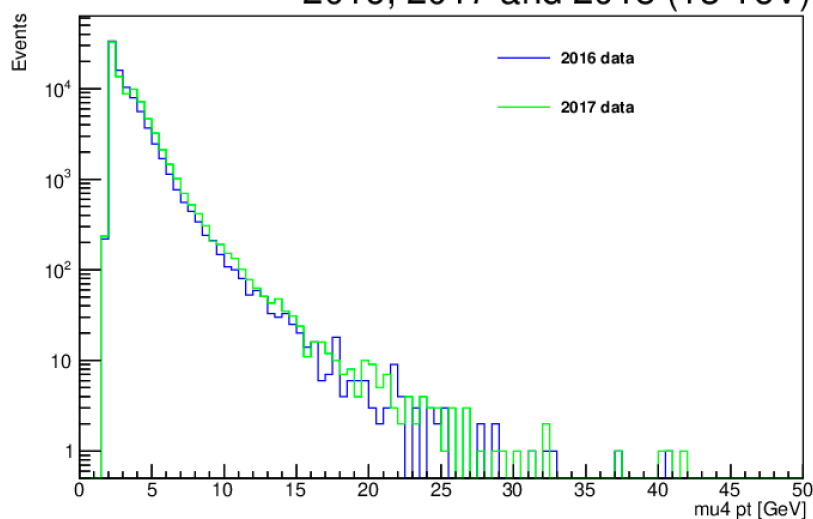
2016, 2017 and 2018 (13 TeV)



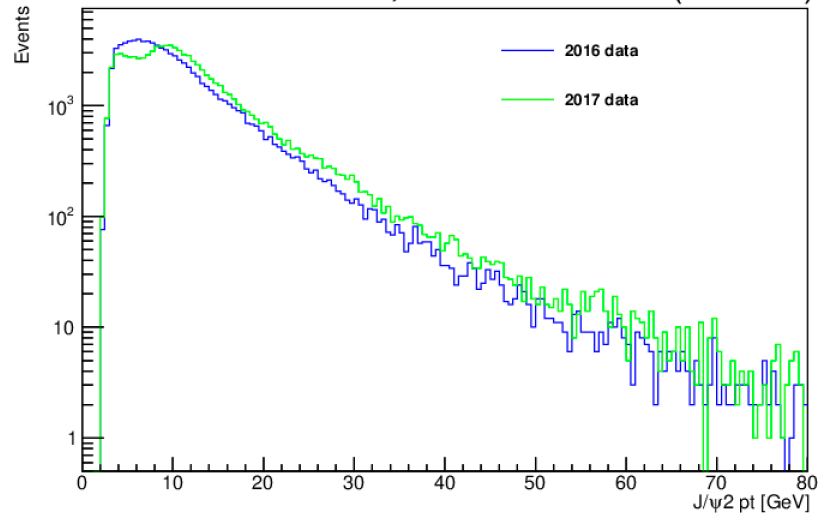
2016, 2017 and 2018 (13 TeV)

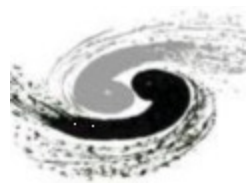


2016, 2017 and 2018 (13 TeV)



2016, 2017 and 2018 (13 TeV)





2016 μ $pt > 3.5$ $15 < J_{\psi^{1/2}} < 20$ 微分截面, 经过map修正后: $1.55 \pm 0.29 \text{ pb}$

2017 μ $pt > 5.5$ $15 < J_{\psi^{1/2}} < 20$ 微分截面, 经过map修正后: $3.39 \pm 0.69 \text{ pb}$