



中國科學院為能物理研究所 Institute of High Energy Physics Chinese Academy of Sciences



# Double Jpsi

Taozhe Yu 2023.5.25

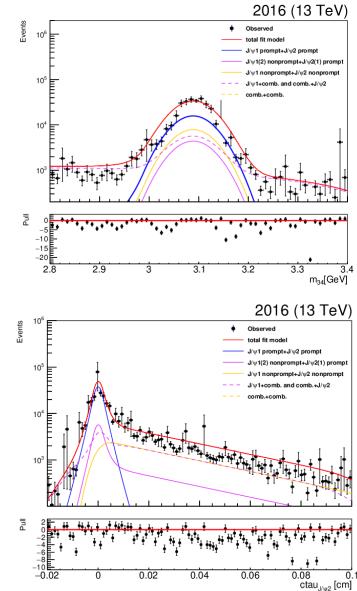


## Add Mapping Fit



2016 (13 TeV) Observed 106 • Even total fit mode J/ψ1 prompt+J/ψ2 prompt J/w1(2) nonprompt+J/w2(1) prompt J/w1 nonprompt+J/w2 nonprompt 10<sup>5</sup> J/ $\psi$ 1+comb. and comb.+J/ $\psi$ 2 comb.+comb 10<sup>4</sup> 10 Pull 1 † † 1 2.8 2.9 3.1 3.3 3.4 3.2 m<sub>12</sub>[GeV] 2016 (13 TeV) Observed Evel total fit mode w1 prompt+J/w2 promp ψ1(2) nonprompt+J/ψ2(1) prompt 10<sup>5</sup> J/w1 nonprompt+J/w2 nonprompt J/w1+comb. and comb.+J/w2 comb.+comb 10<sup>4</sup> 10<sup>3</sup> Pull 0.02 -0.020.04 0.06 0.08 0.1 0

ctau<sub>J/w1</sub> [cm]



After I add Mapping, the fit result seems not good. Maybe I should get the PDF after adding Mapping.



Events/(0.01 GeV)

900 800 700

600 E

500 <del>|</del>

400E 300Ē

200E

100 2.8

Events/(0.01 GeV)

1500

1000

500

2.8

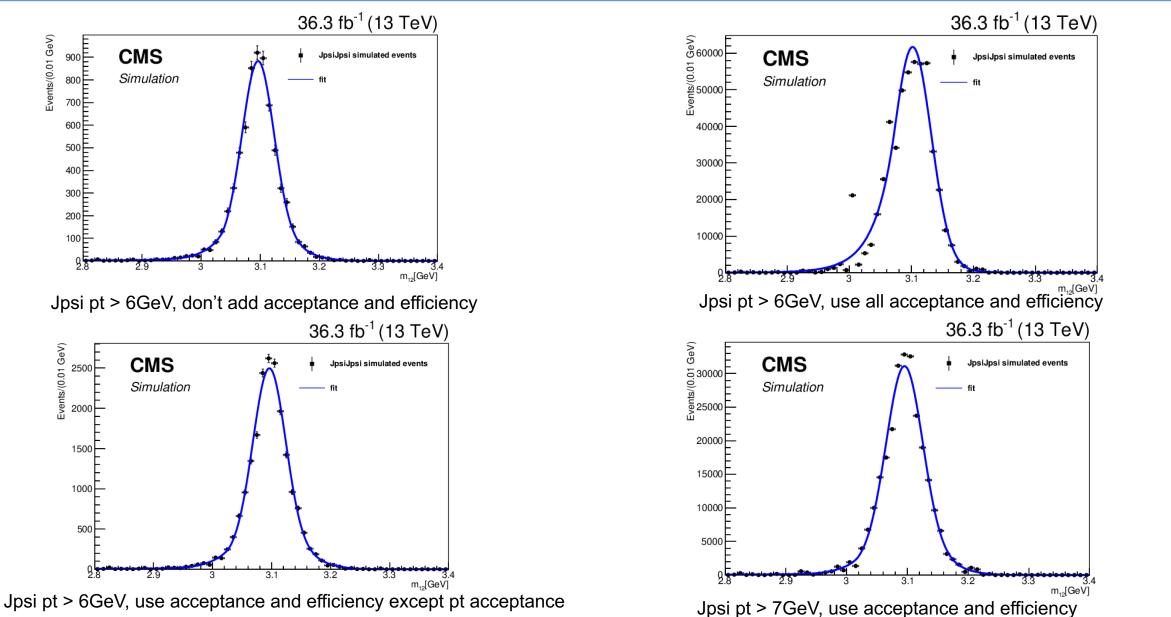
2500

CMS

Simulation

CMS

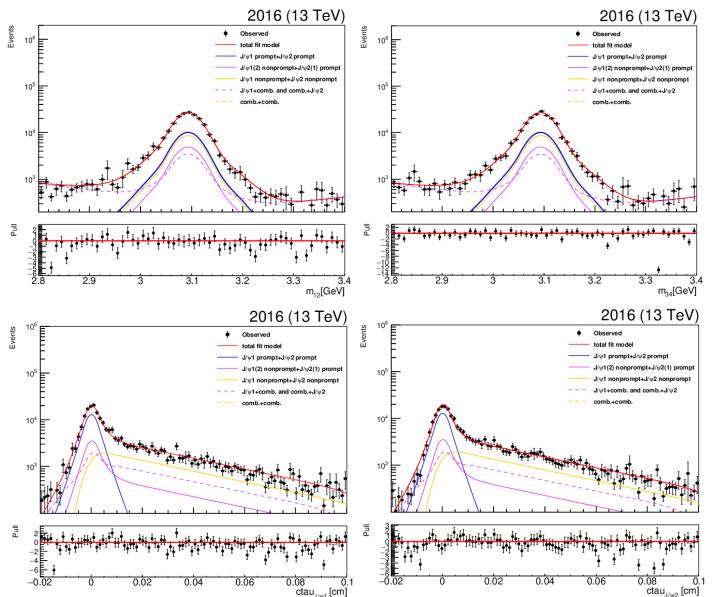






## Add mapping Fit(Jpsi pt > 7GeV)





- We make Jpsi pt >7GeV
- Total number of events in this region is 11254
- Prompt Jpsi pair events are  $80300 \pm 3130$
- Prompt Jpsi + Non-prompt Jpsi events are 38960±3075
- Non-prompt Jpsi pair events are  $68655\pm4285$
- Jpsi + comb. events are  $49542 \pm 4852$
- Comb. + comb. Events are  $119\pm1078$





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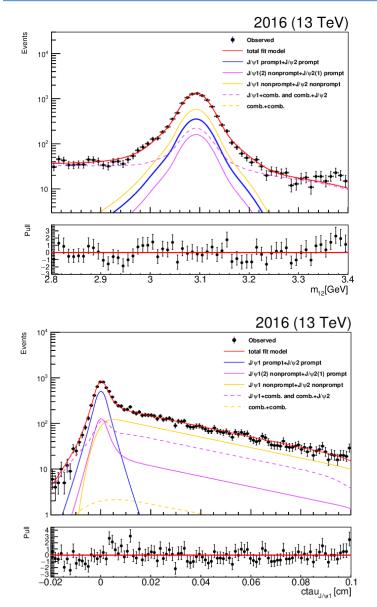


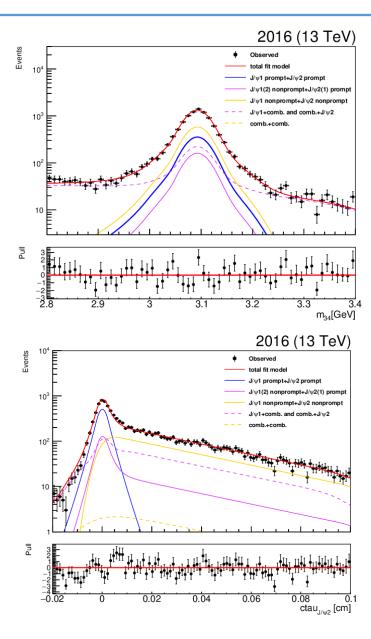
# backup







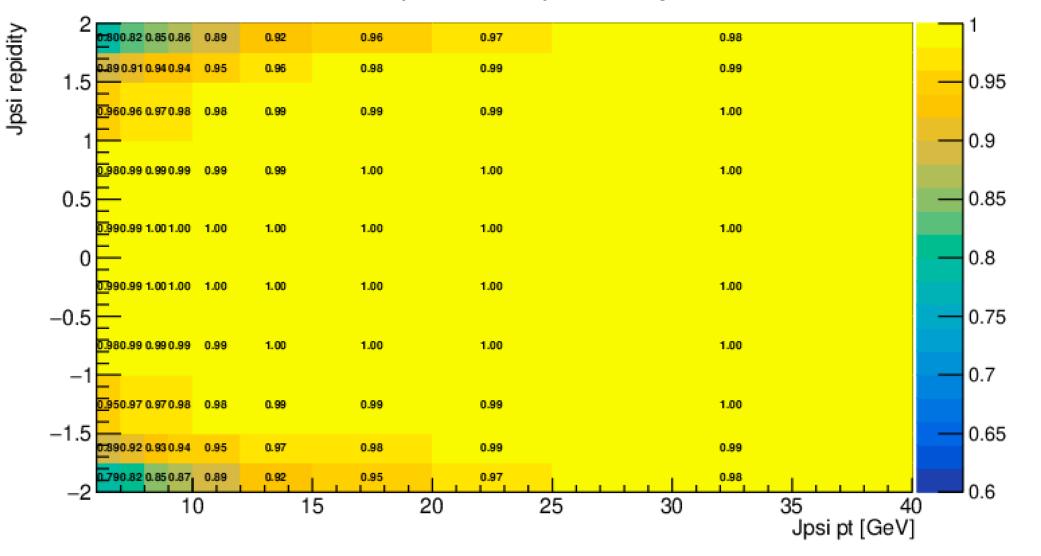






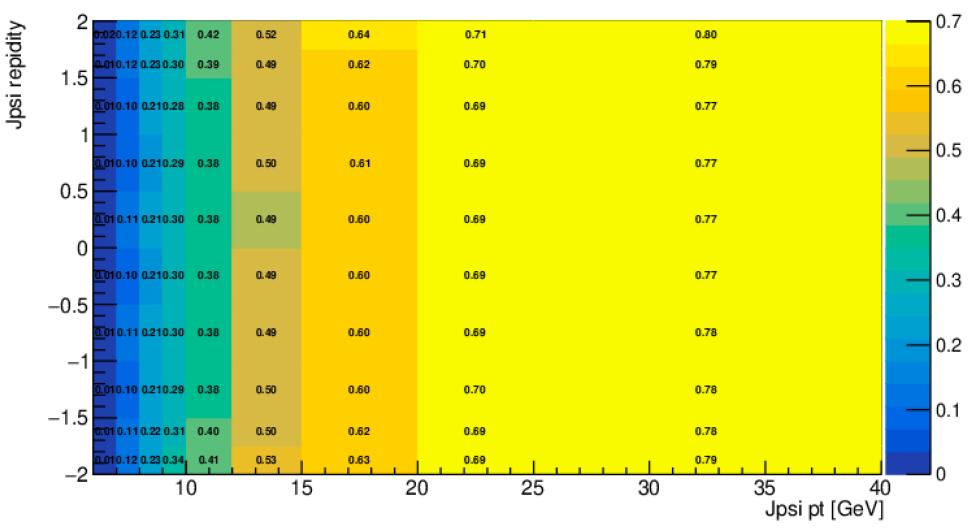


### acceptance eta probability







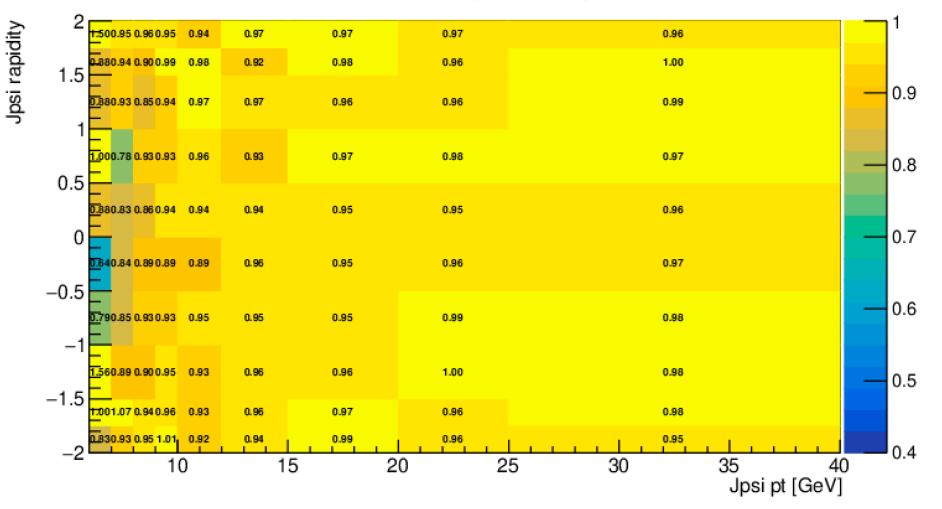


acceptance pt probability





#### reconstruct probability





Jpsi rapidity

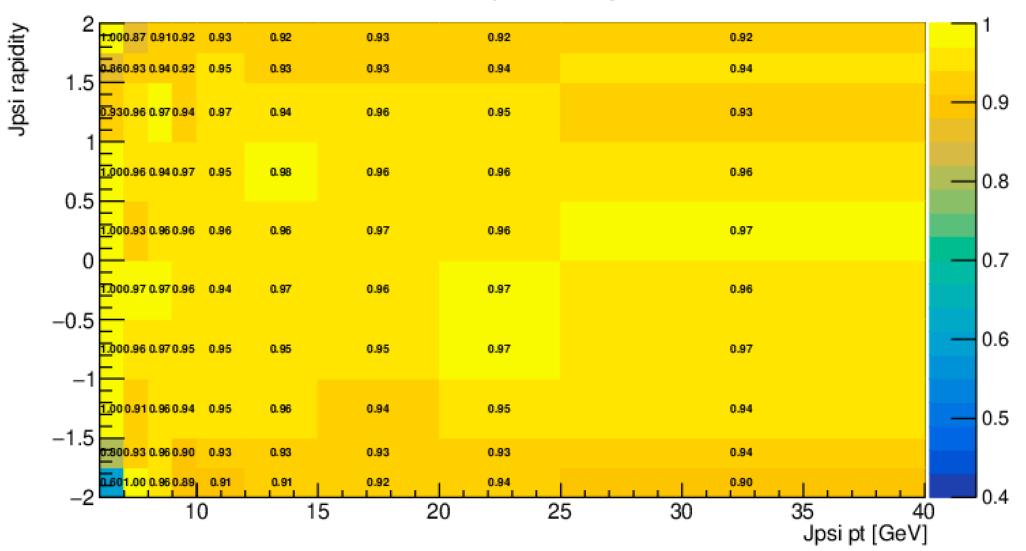


#### 2 0.830.98 1.00 0.98 0.99 0.99 0.99 1.00 1.00 -000.93 0.96 0.97 0.99 0.99 0.98 0.98 0.97 1.5 0.9 \_ 1.000.92 0.94 0.95 0.96 0.96 0.97 0.96 0.96 0.890.94 0.90 0.94 0.95 0.94 0.96 0.94 0.96 0.8 0.5 0.91 0.89 0.94 0.94 0.96 0.95 0.96 0.96 0.7 0.7 0 1.000.94 0.90 0.94 0.94 0.94 0.96 0.95 0.96 -0.5 0.6 89 0.93 0.91 0.94 0.97 0.96 0.96 0.95 -1 0.97 0.97 0.97 30.92 0.97 0.94 0.95 0.96 0.5 -1.5 1.00<mark>0.94</mark> 1.00 0.97 0.98 0.99 0.98 0.99 0.98 1001.00 0.991.00 0.98 0.99 0.99 86.0 0.99 0.4 -2 35 40 Jpsi pt [GeV] 20 25 10 15 30 35

selection probability





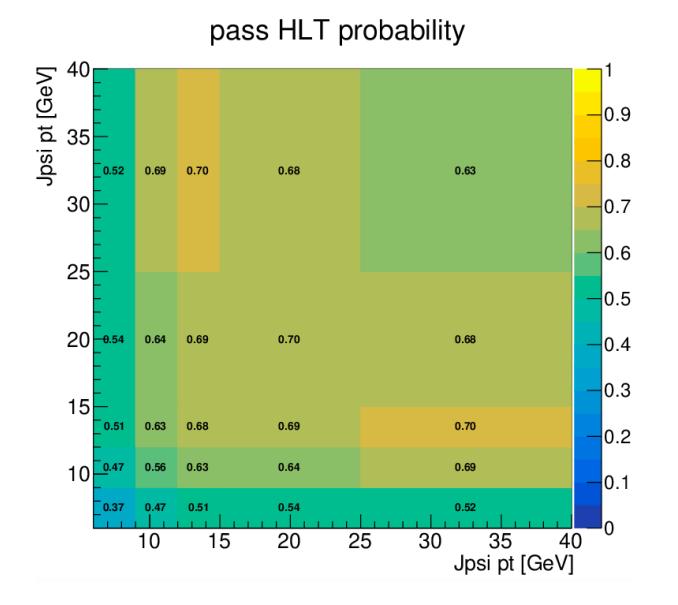


### vertex probability

11











#### 40 Jpsi pt [GeV] 0.9 \_ 35 -0.8 0.94 0.96 0.97 0.98 0.94 30 -0.7 -0.6 25 0.5 20 0.95 0.98 0.98 0.98 0.97 0.4 0.3 15 0.98 0.99 0.98 0.96 0.96 0.2 0.98 0.94 0.98 0.98 10 0.94 0.1 0.96 0.94 0.96 0.95 0.94 0 35 40 Jpsi pt [GeV] 20 25 30 10 15

### pass triMatched probability