中国科学技术大学
University of Science and Technology of China

ALICE

# Jpsi cross section calculation with high IR data

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# Dataset

## Data

- LHC22_highIR

## MC

- LHC23j7b:
  - 520259, 520294, 520471, 520472, 520473

pp, 13.6 TeV - Prompt J/psi + psi(2S) production in pp collisions at midrapidity, anchored to LHC22f apass4, w/o distortion maps, ITS/MFT ideal alignments

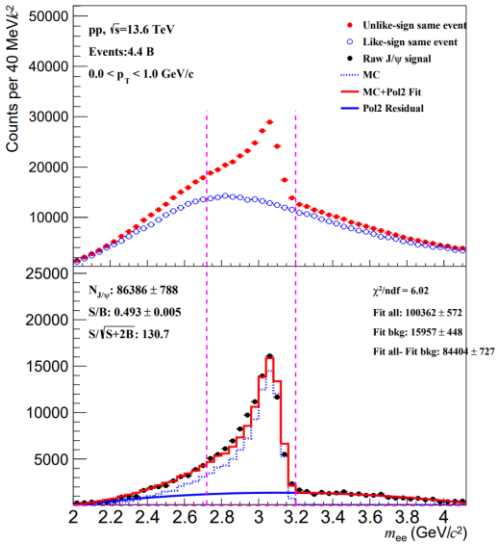
https://alice.its.cern.ch/jira/browse/O2-4298

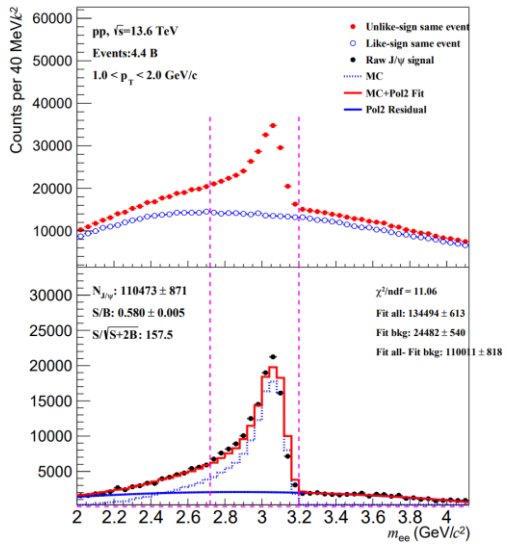
# Analysis cuts

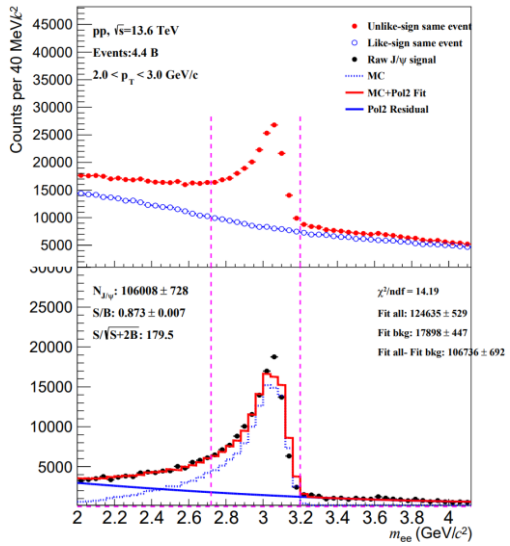
- Event selection:
  - |VtxZ| < 10 cm

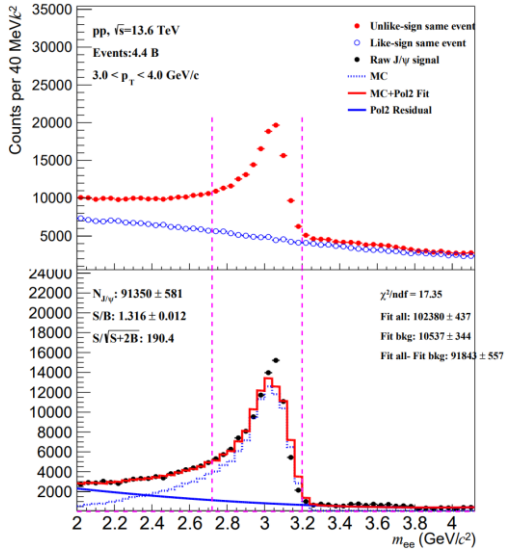
- Tracking cuts:
  - $p_T$ > 1 GeV/c
  - |η| < 0.9
  - TPCncls > 90
  - TPCchi2 < 4
  - ITSncls > 3
  - ITSchi2 < 5
  - At least one hit at the first two layers of ITS
  - |DCAz | < 1.5 cm
  - |DCAzy | < 1.5 cm
  - eFromJpsi(MC)
- PID cuts:
  - -2 < TPC$n\sigma^{e}$ < 3
  - TPC$n\sigma^{p}$ > 3
  - TPC$n\sigma^{\pi}$ > 3

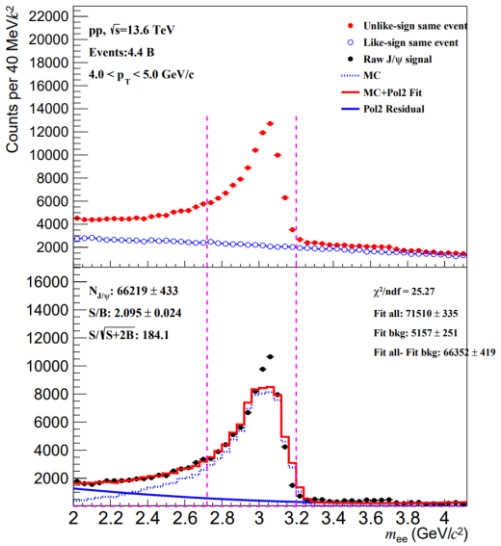
# Signal extraction

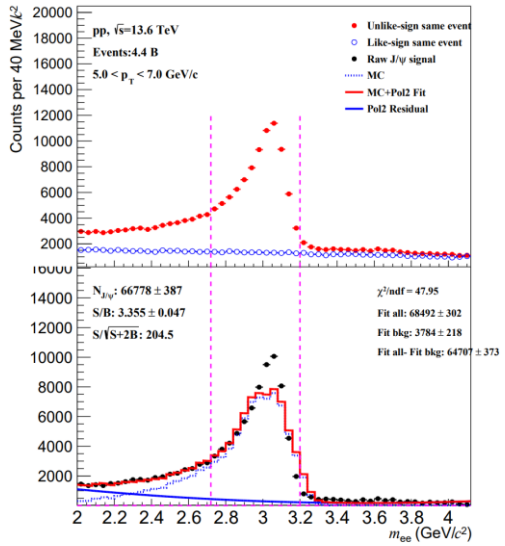


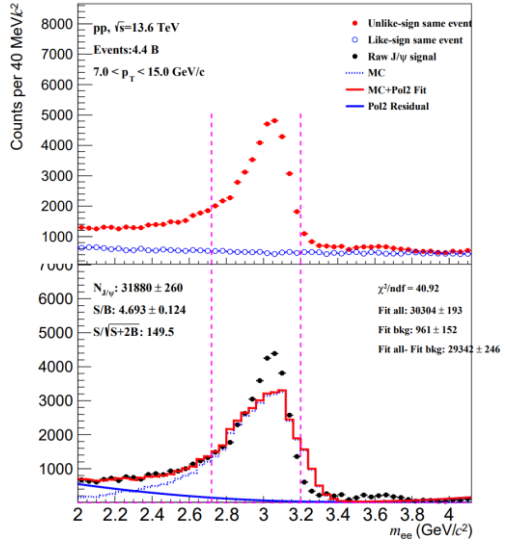



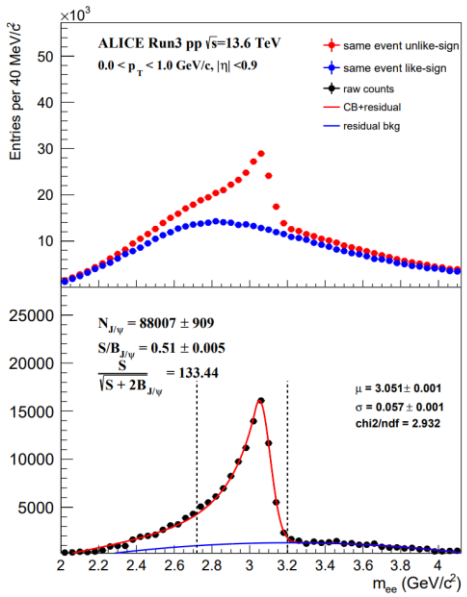



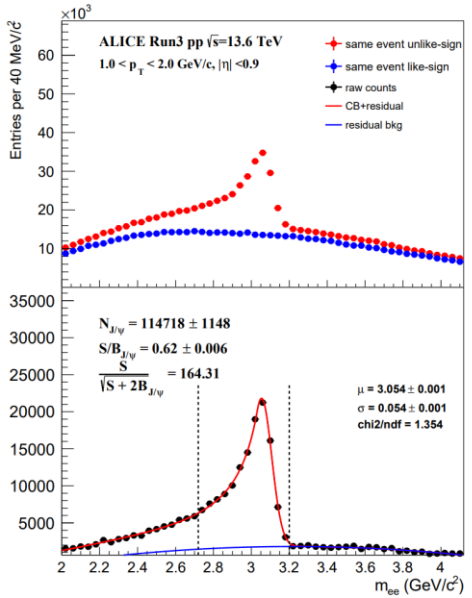



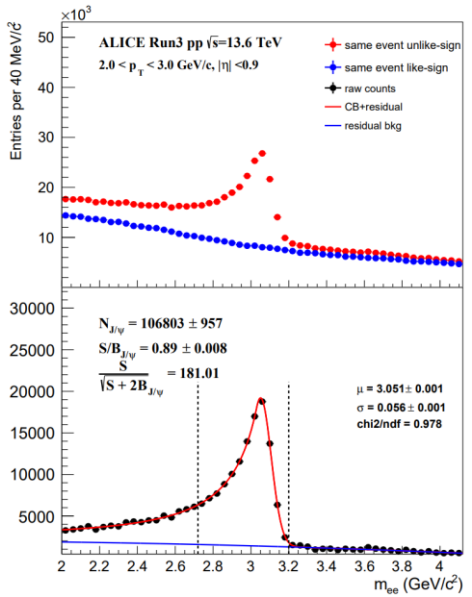



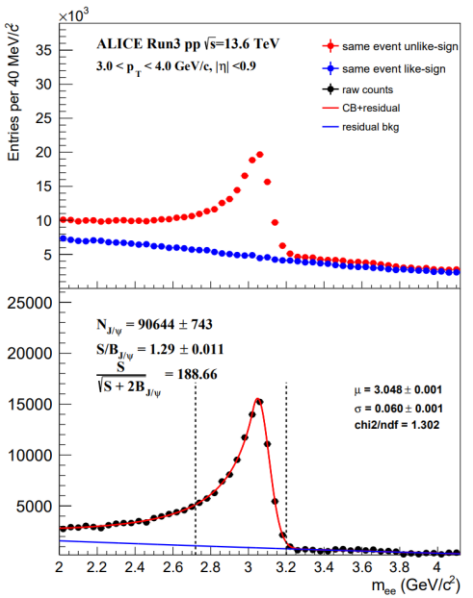

Signal shape directly obtained from MC.

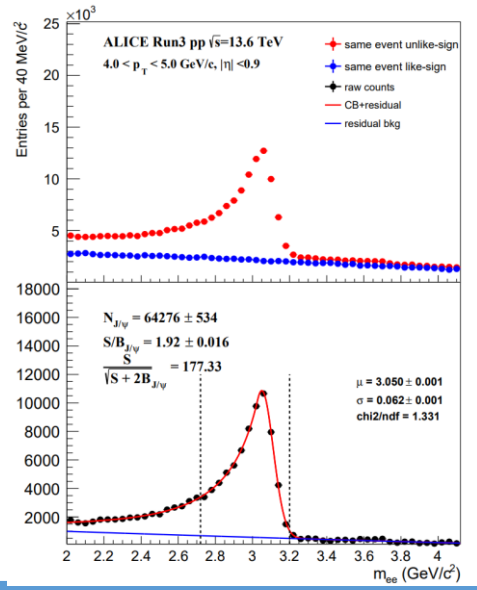
# Signal extraction

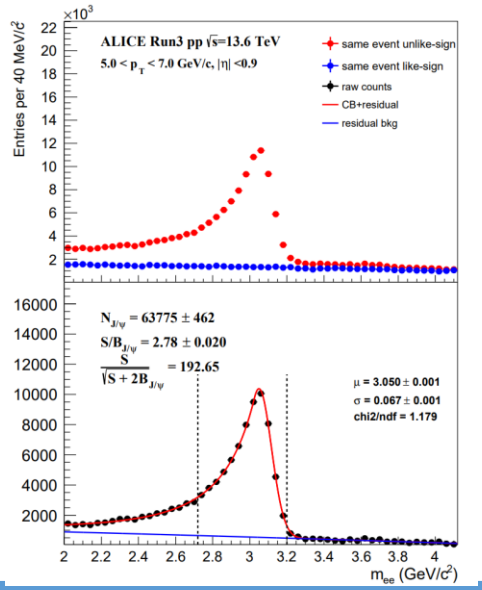


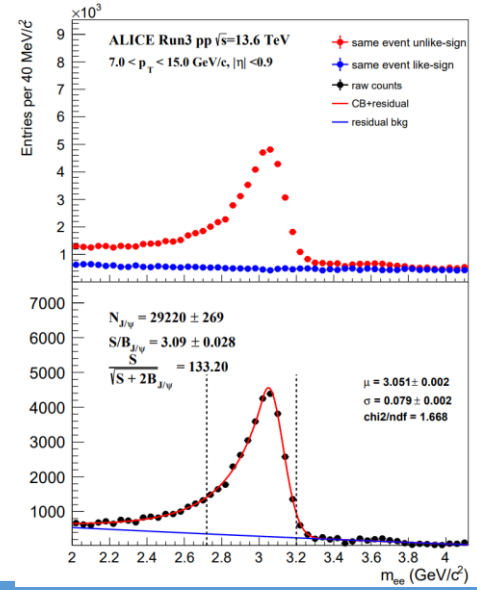



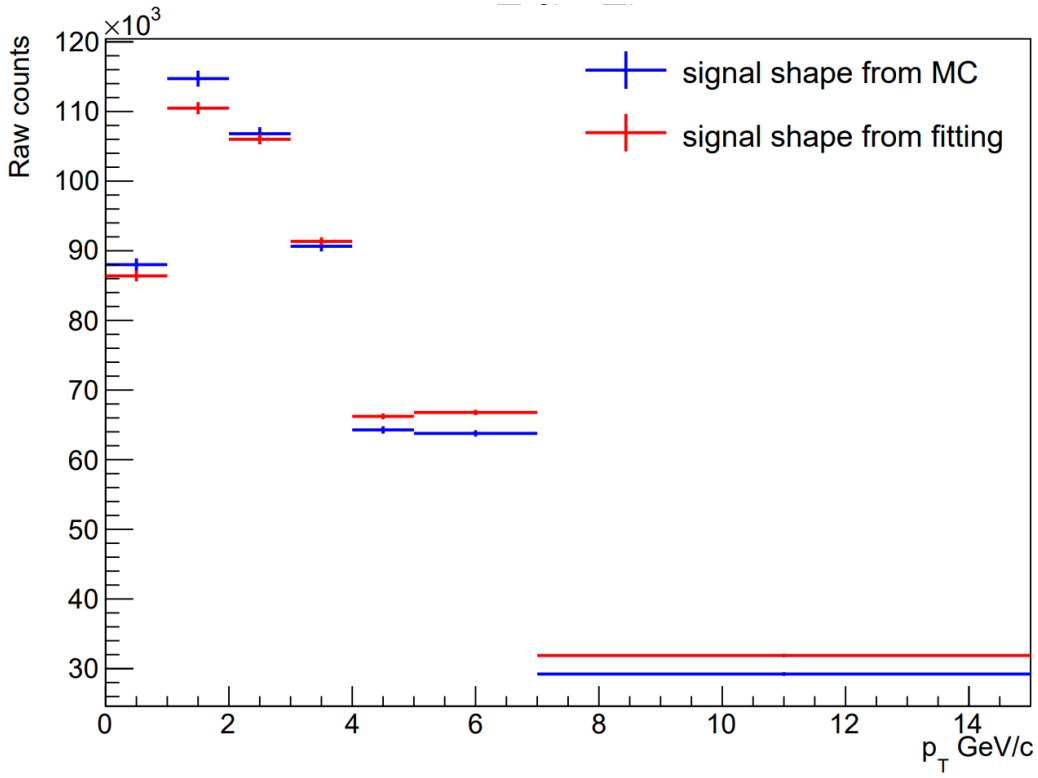



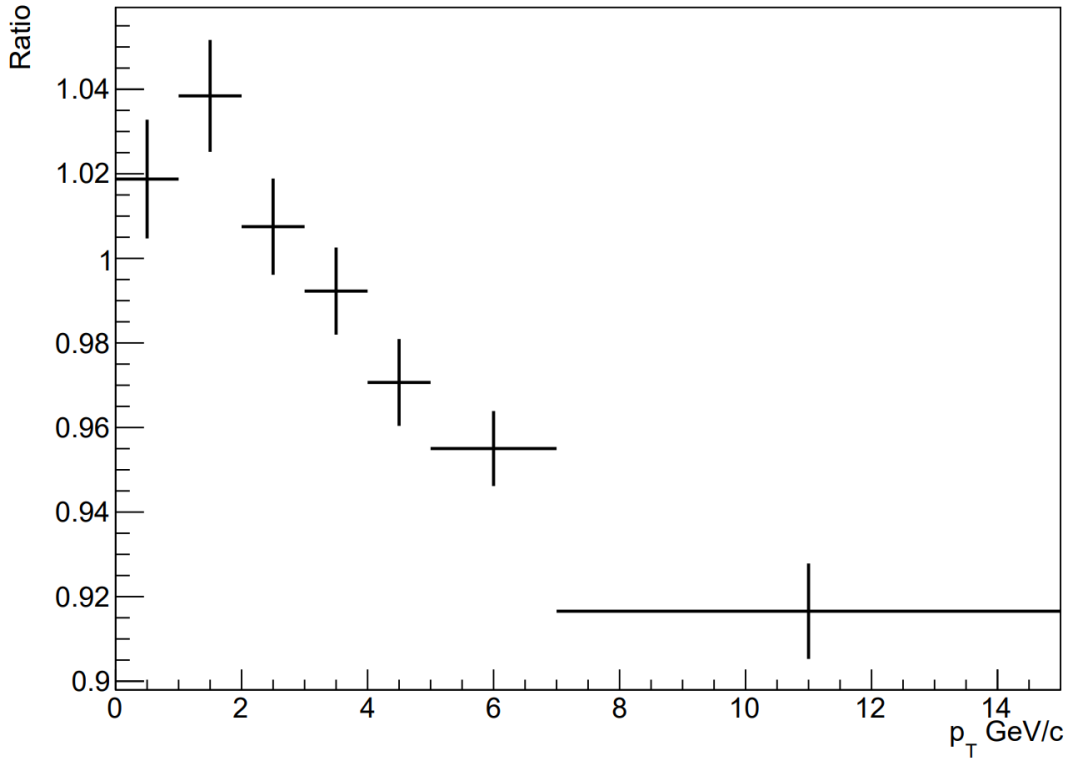




Directly fitted with Crystal Ball function.

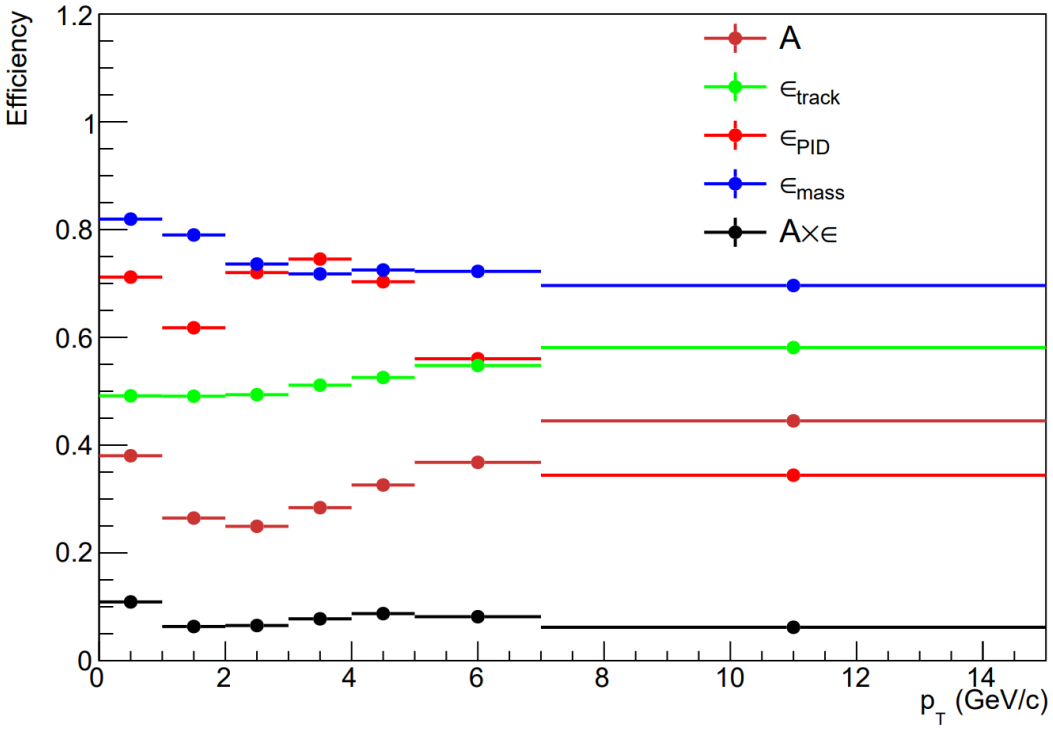
# Raw counts


Raw counts
×10^3
120
110
100
90
80
70
60
50
40
30
0
2
4
6
8
10
12
14
p_T GeV/c
signal shape from MC
signal shape from fitting


Ratio
1.04
1.02
1
0.98
0.96
0.94
0.92
0.9
0
2
4
6
8
10
12
14
p_T GeV/c

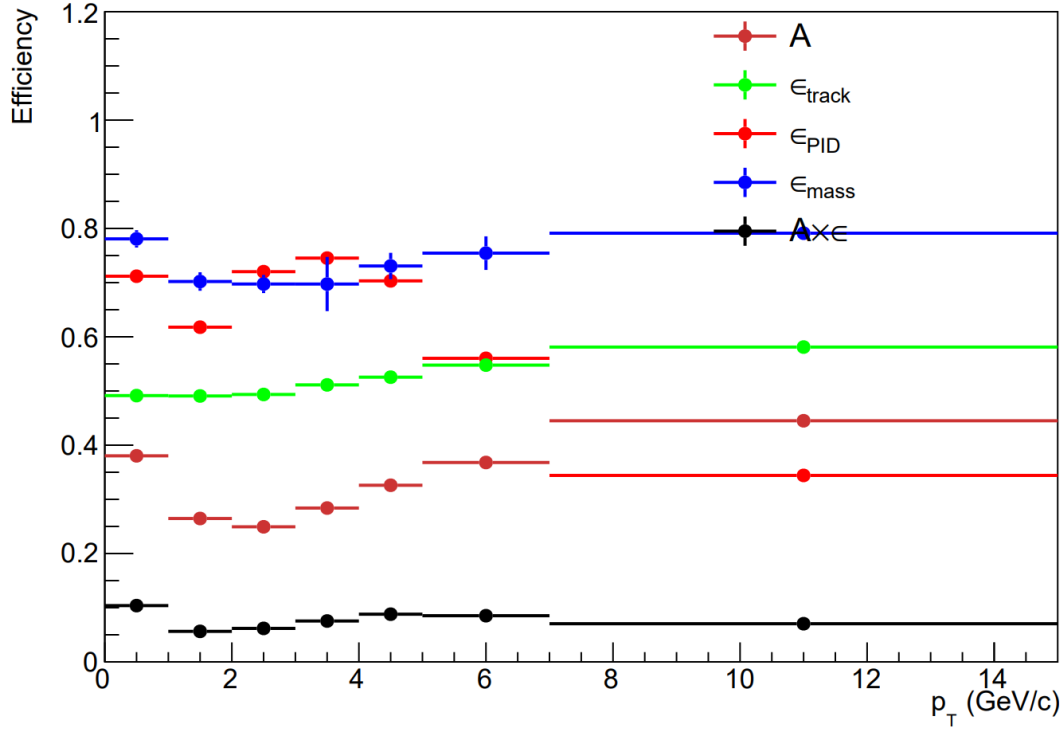
# Efficiency

**Signal shape from MC:**

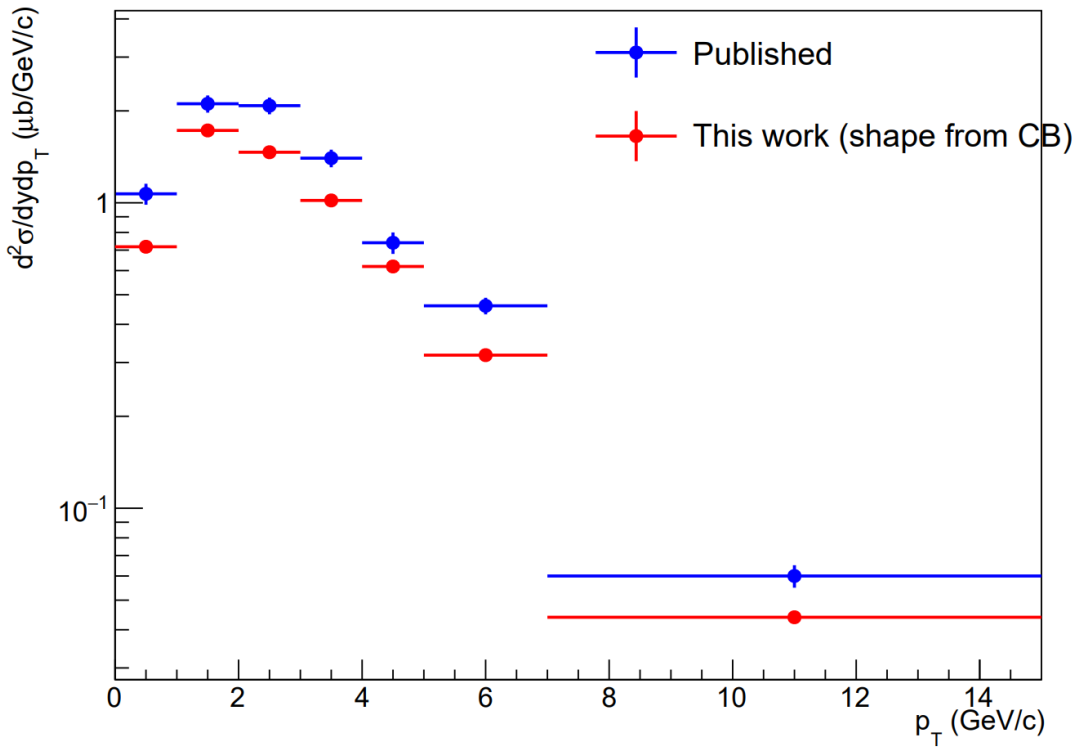


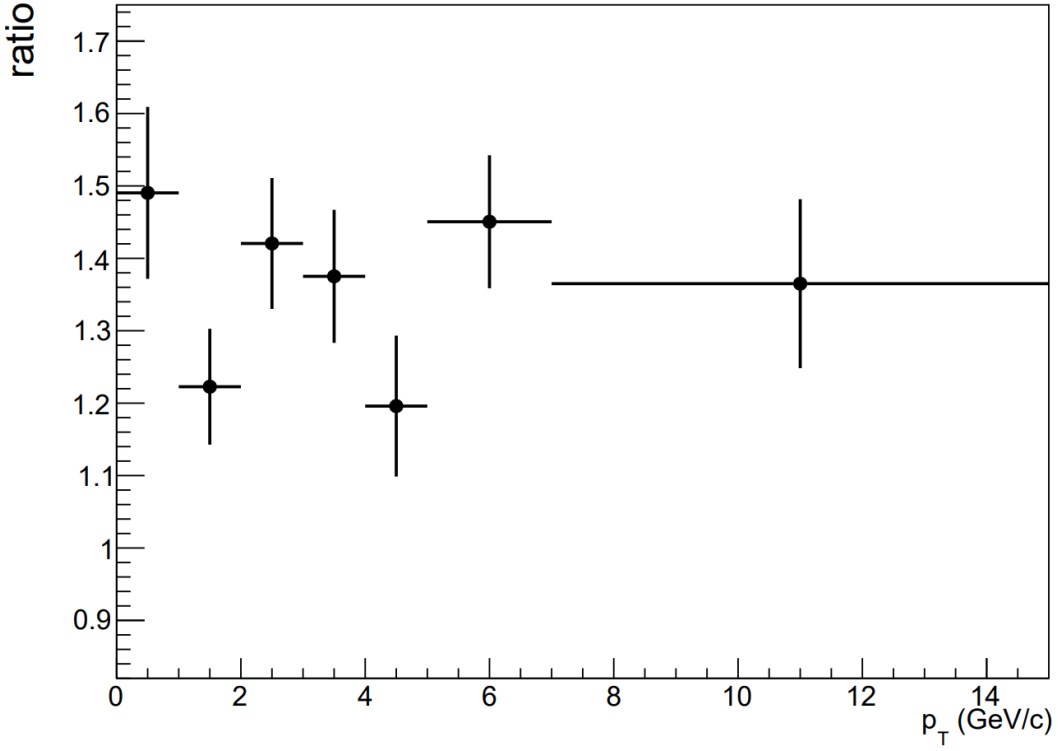

Only difference is mass window efficiency.

**Signal shape from CB function:**



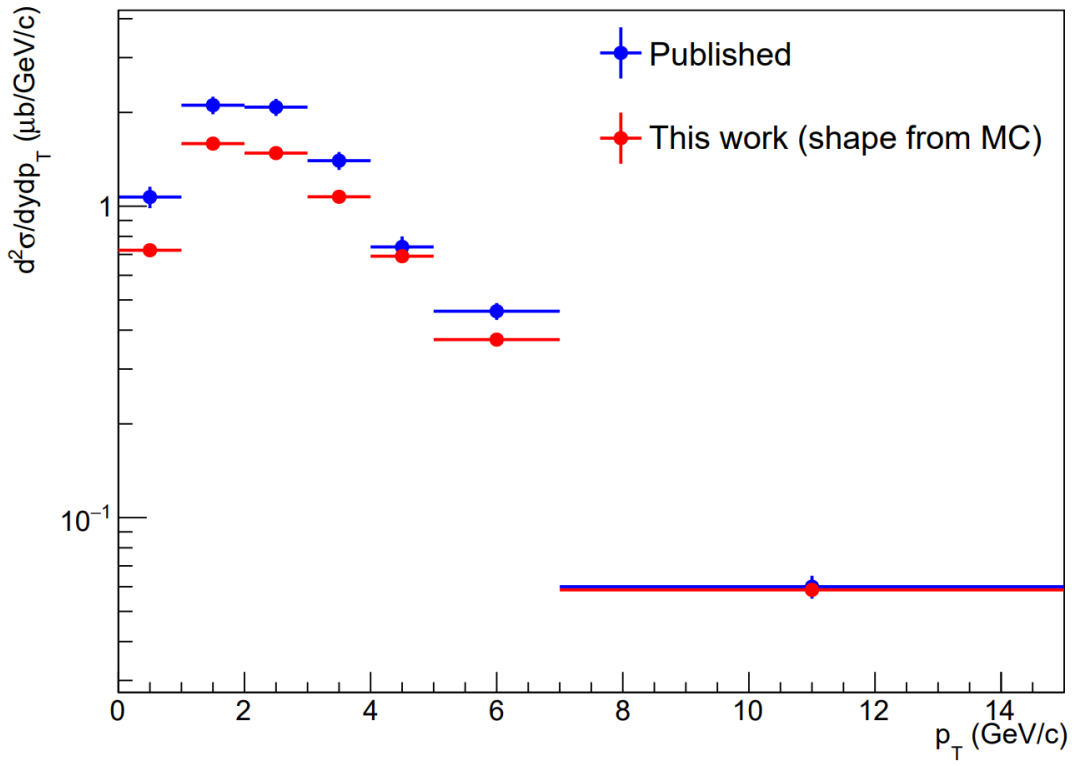
# Cross section

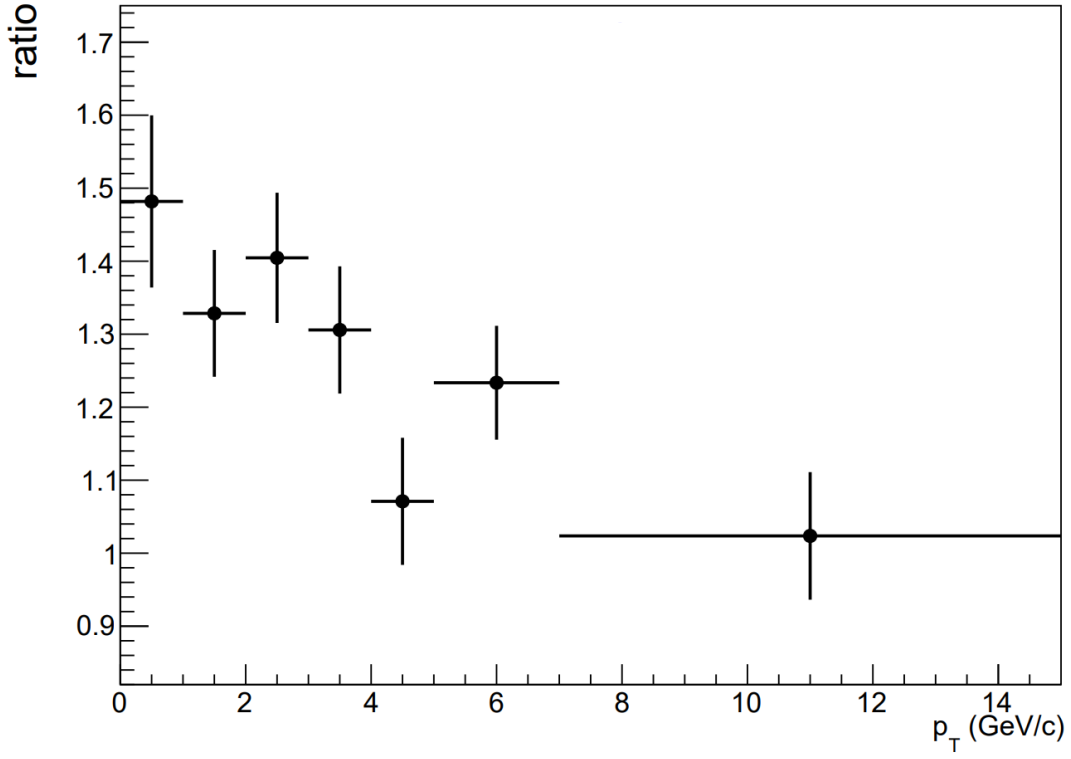



Signal shape from CB function

# Cross section




Signal shape from MC