

Events per 0.025 GeV

Pb-Pb,  $\sqrt{s_{NN}} = 5.02$  TeV

$10 < p_T < 11$  GeV/c

centrality 70-90%

$2.5 < y < 4$

fitFuncCB2VWG\_pp13\_2.20\_4.50

$N_{J/\psi} = 52 \pm 8$

Mass =  $3.1044 \pm 0.0184$

$\sigma_{J/\psi} = 0.0985 \pm 0.0476$

$N_{\psi'} = 8 \pm 1$

$\chi^2/nDoF = 0.36$

$S/B_{\pm 3\sigma} = 26.73$

$S/\sqrt{S+B} = 1.08$

Fit Status = 0

Fit Validity : good

Fit Cov Matrix Status = 3

t1: 0.97

p1: 6.97

t2: 1.86

p1: 14.99

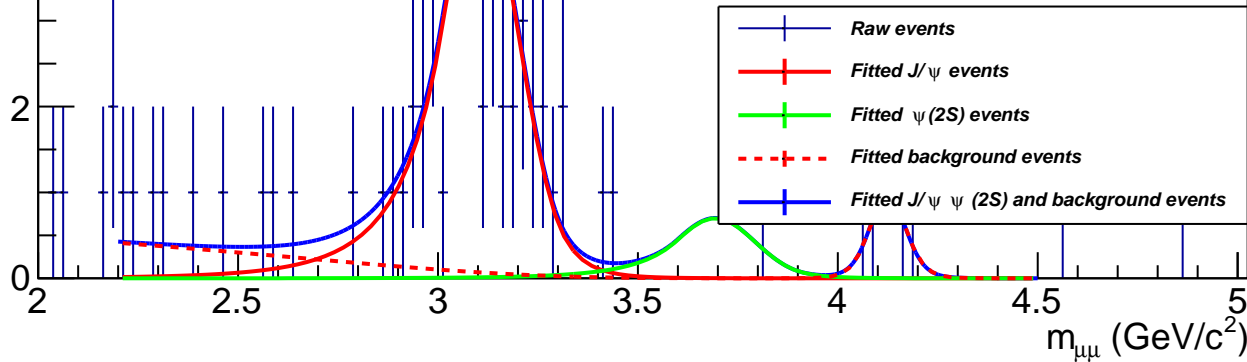
Background Normalization factor:  $0.973 \pm 0.564$

a1:  $4.125 \pm 0.049$

a2:  $0.044 \pm 0.014$

a3:  $0.014 \pm 0.850$

a4:  $6.584 \pm 2.493$



Events per 0.025 GeV

Pb-Pb,  $\sqrt{s_{NN}} = 5.02$  TeV

$10 < p_T < 11$  GeV/c

centrality 70-90%

$2.5 < y < 4$

fitFuncCB2VWG\_geant3\_2.20\_4.50

$N_{J/\psi} = 53 \pm 8$

Mass =  $3.0978 \pm 0.0178$

$\sigma_{J/\psi} = 0.1000 \pm 0.0382$

$N_{\psi^*} = 4 \pm 0$

$\chi^2/nDoF = 0.35$

S/B =  $35.51^{+3.0}$

S/  $\sqrt{S+B} = 1.10$

Fit Status = 0

Fit Validity : good

Fit Cov Matrix Status = 3

t1: 1.17

p1: 3.65

t2: 1.95

p1: 3.10

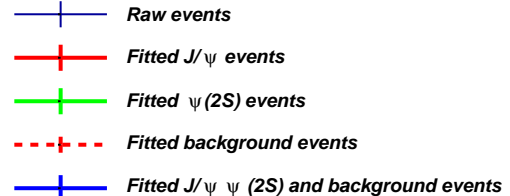
Background Normalization factor:  $1.043 \pm 3.290$

a1:  $2.072 \pm 0.847$

a2:  $0.176 \pm 0.428$

a3:  $0.172 \pm 1.602$

a4:  $0.658 \pm 1.883$



$m_{\mu\mu}$  (GeV/c<sup>2</sup>)

Events per 0.025 GeV

Pb-Pb,  $\sqrt{s_{NN}} = 5.02$  TeV

$10 < p_T < 11$  GeV/c

centrality 70-90%

$2.5 < y < 4$

fitFuncCB2VWG\_pp13\_2.40\_4.70

$N_{J/\psi} = 50 \pm 0$

Mass =  $3.0989 \pm 0.0185$

$\sigma_{J/\psi} = 0.1000 \pm 0.0451$

$N_{\psi'} = 0 \pm 0$

$\chi^2/nDoF = 0.32$

$S/B_{\pm 3\sigma} = 12.35$

$S/\sqrt{S+B} = 1.05$

Fit Status = 4

Fit Validity : bad

Fit Cov Matrix Status = 1

t1: 0.97

p1: 6.97

t2: 1.86

p1: 14.99

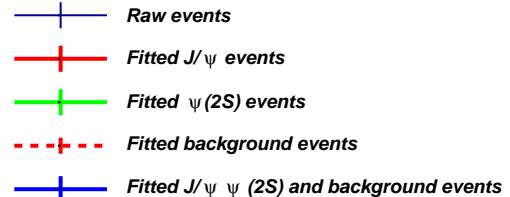
Background Normalization factor:  $0.161 \pm 0.058$

a1:  $1.809 \pm 0.576$

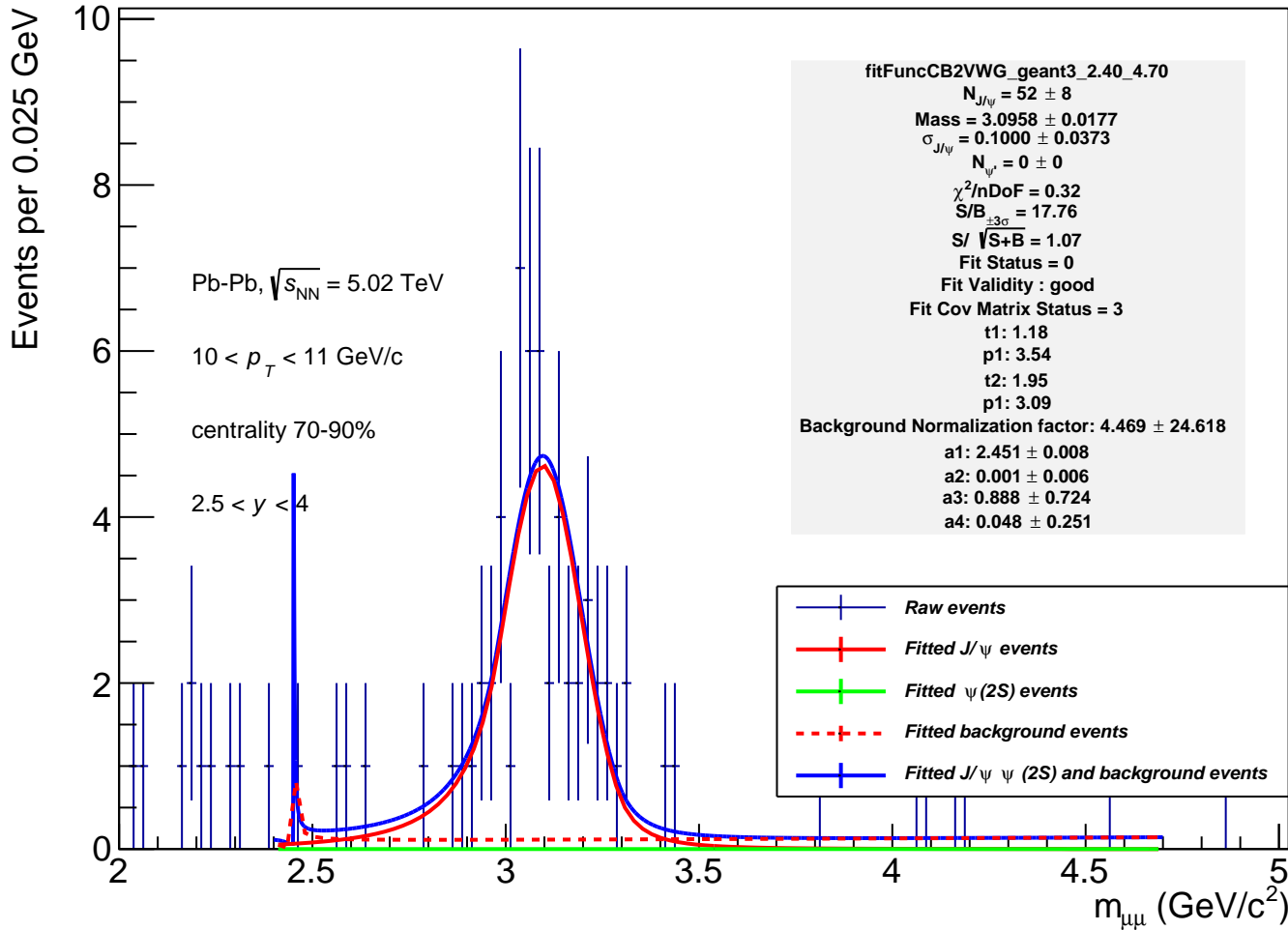
a2:  $10.000 \pm 17.675$

a3:  $9.872 \pm 19.194$

a4:  $-9.707 \pm 18.360$



$m_{\mu\mu}$  (GeV/c<sup>2</sup>)



Events per 0.025 GeV

Pb-Pb,  $\sqrt{s_{NN}} = 5.02$  TeV

$10 < p_T < 11$  GeV/c

centrality 70-90%

$2.5 < y < 4$

fitFuncCB2Pol\_pp13\_2.20\_4.50

$N_{J/\psi} = 52 \pm 0$

Mass =  $3.0934 \pm 0.0000$

$\sigma_{J/\psi} = 0.0983 \pm 0.0000$

$N_{\psi'} = 4 \pm 0$

$\chi^2/\text{nDoF} = 0.36$

$S/B_{\pm 3\sigma} = 32.48$

$S/\sqrt{S+B} = 1.09$

Fit Status = 4

Fit Validity : bad

Fit Cov Matrix Status = 2

t1: 0.97

p1: 6.97

t2: 1.86

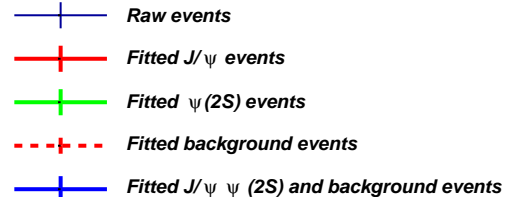
p1: 14.99

Background Normalization factor:  $12.977 \pm 0.000$

a1:  $-0.722 \pm 0.000$ ; a2:  $0.13001 \pm 0.000$

b1:  $21.657 \pm 0.000$ ; b2:  $-3.570 \pm 13.442$

b3:  $-6.483 \pm 0.000$ ; b4:  $1.792 \pm 0.000$



$m_{\mu\mu}$  (GeV/c<sup>2</sup>)

Events per 0.025 GeV

Pb-Pb,  $\sqrt{s_{NN}} = 5.02$  TeV

$10 < p_T < 11$  GeV/c

centrality 70-90%

$2.5 < y < 4$

fitFuncCB2Pol\_geant3\_2.20\_4.50

$N_{J/\psi} = 49 \pm 0$

Mass =  $3.0951 \pm 0.0013$

$\sigma_{J/\psi} = 0.0867 \pm 0.0007$

$N_{\psi'} = 0 \pm 0$

$\chi^2/nDoF = 0.36$

$S/B_{\pm 3\sigma} = 11.16$

$S/\sqrt{S+B} = 1.03$

Fit Status = 4

Fit Validity : bad

Fit Cov Matrix Status = 2

t1: 1.17

p1: 3.65

t2: 1.95

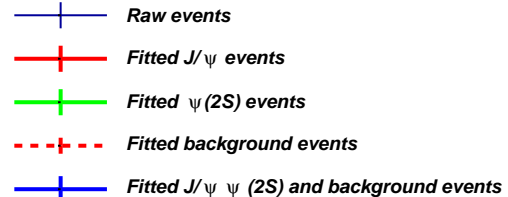
p1: 3.10

Background Normalization factor:  $3.433 \pm 0.066$

a1:  $-4.904 \pm 0.007$ ; a2:  $2.06651 \pm 0.003$

b1:  $93.188 \pm 0.000$ ; b2:  $-72.607 \pm 0.000$

b3:  $-11.454 \pm 0.000$ ; b4:  $11.446 \pm 0.000$



$m_{\mu\mu}$  (GeV/c<sup>2</sup>)

Events per 0.025 GeV

Pb-Pb,  $\sqrt{s_{NN}} = 5.02$  TeV

$10 < p_T < 11$  GeV/c

centrality 70-90%

$2.5 < y < 4$

fitFuncCB2Pol\_pp13\_2.40\_4.70

$N_{J/\psi} = 46 \pm 0$

Mass =  $3.0984 \pm 0.0001$

$\sigma_{J/\psi} = 0.0718 \pm 0.0000$

$N_{\psi^*} = 0 \pm 0$

$\chi^2/\text{nDoF} = 0.38$

$S/B_{\pm 3\sigma} = 12.03$

$S/\sqrt{S+B} = 1.00$

Fit Status = 4

Fit Validity : bad

Fit Cov Matrix Status = 2

t1: 0.97

p1: 6.97

t2: 1.86

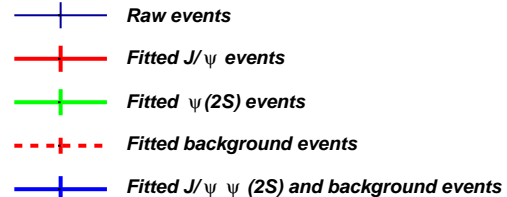
p1: 14.99

Background Normalization factor:  $26.323 \pm 0.025$

a1:  $0.170 \pm 0.000$ ; a2:  $-0.08263 \pm 0.000$

b1:  $-11.846 \pm 0.000$ ; b2:  $49.979 \pm 0.000$

b3:  $4.115 \pm 0.000$ ; b4:  $-3.037 \pm 0.009$



$m_{\mu\mu}$  (GeV/c<sup>2</sup>)

Events per 0.025 GeV

Pb-Pb,  $\sqrt{s_{NN}} = 5.02$  TeV

$10 < p_T < 11$  GeV/c

centrality 70-90%

$2.5 < y < 4$

fitFuncCB2Pol\_geant3\_2.40\_4.70

$N_{J/\psi} = 50 \pm 0$

Mass =  $3.0951 \pm 0.0000$

$\sigma_{J/\psi} = 0.0769 \pm 0.0000$

$N_{\psi^*} = 0 \pm 0$

$\chi^2/\text{nDoF} = 0.41$

$S/B_{\pm 3\sigma} = 12.95$

$S/\sqrt{S+B} = 1.04$

Fit Status = 4

Fit Validity : bad

Fit Cov Matrix Status = 2

t1: 1.18

p1: 3.54

t2: 1.95

p1: 3.09

Background Normalization factor:  $44.921 \pm 0.007$

a1:  $-0.114 \pm 0.000$ ; a2:  $-0.02212 \pm 0.000$

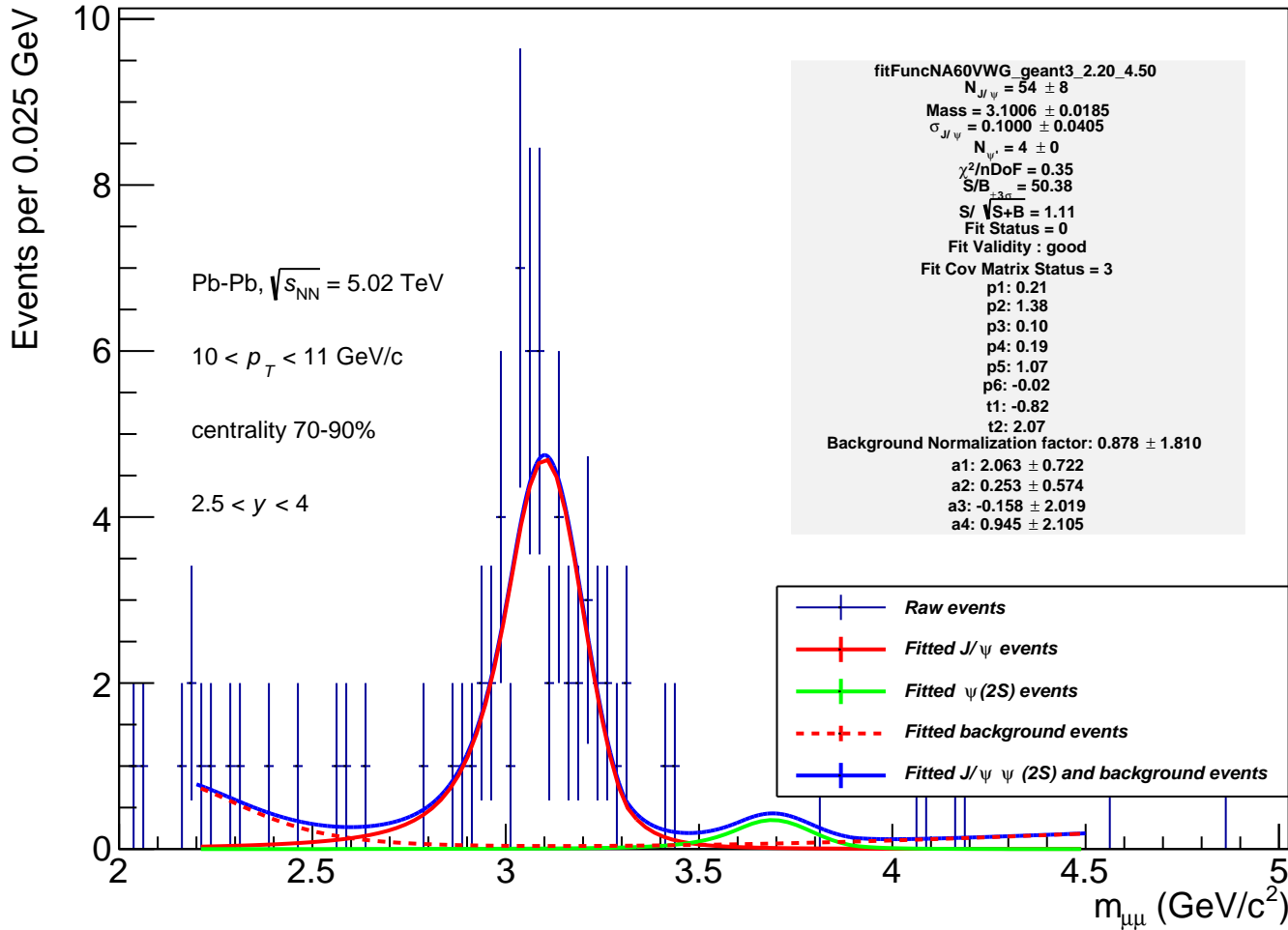
b1:  $99.841 \pm 0.000$ ; b2:  $20.093 \pm 0.000$

b3:  $-2.084 \pm 0.052$ ; b4:  $-1.436 \pm 0.000$

- +— Raw events
- +— Fitted  $J/\psi$  events
- +— Fitted  $\psi(2S)$  events
- - + - - Fitted background events
- +— Fitted  $J/\psi$   $\psi(2S)$  and background events

$m_{\mu\mu}$  (GeV/c<sup>2</sup>)





Events per 0.025 GeV

Pb-Pb,  $\sqrt{s_{NN}} = 5.02$  TeV

$10 < p_T < 11$  GeV/c

centrality 70-90%

$2.5 < y < 4$

fitFuncNA60VWG\_geant3\_2.40\_4.70

$N_{J/\psi} = 52 \pm 7$

Mass =  $3.0987 \pm 0.0180$

$\sigma_{J/\psi} = 0.1000 \pm 0.0402$

$N_{\psi'} = 0 \pm 0$

$\chi^2/nDoF = 0.31$

$S/B_{3\sigma} = 18.73$

$S/\sqrt{S+B} = 1.08$

Fit Status = 0

Fit Validity : good

Fit Cov Matrix Status = 3

p1: 0.20

p2: 1.58

p3: 0.16

p4: 0.19

p5: 1.07

p6: -0.02

t1: -0.55

t2: 2.06

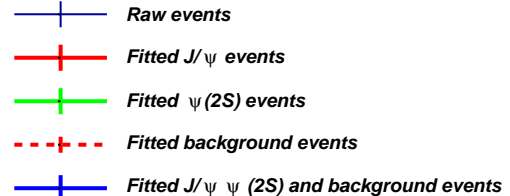
Background Normalization factor:  $4.558 \pm 38.351$

a1:  $2.451 \pm 0.008$

a2:  $0.001 \pm 0.006$

a3:  $0.877 \pm 0.571$

a4:  $0.058 \pm 0.260$



$m_{\mu\mu}$  (GeV/c<sup>2</sup>)

Events per 0.025 GeV

Pb-Pb,  $\sqrt{s_{NN}} = 5.02$  TeV

$10 < p_T < 11$  GeV/c

centrality 70-90%

$2.5 < y < 4$

fitFuncNA60Pol2\_geant3\_2.20\_4.50

$N_{J/\psi} = 50 \pm 7$

Mass =  $3.0938 \pm 0.0168$

$\sigma_{J/\psi} = 0.0979 \pm 0.0432$

$N_{\psi'} = -3 \pm 0$

$\chi^2/nDoF = 0.34$

$S/B = 9.55$

$S/\sqrt{S+B} = 1.02$

Fit Status = 0

Fit Validity : good

Fit Cov Matrix Status = 3

p1: 0.21

p2: 1.38

p3: 0.10

p4: 0.19

p5: 1.07

p6: -0.02

t1: -0.82

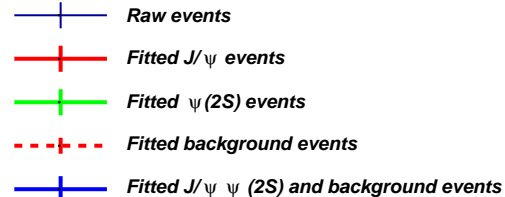
t2: 2.07

Background Normalization factor:  $0.710 \pm 0.224$

a1:  $-8.970 \pm 0.577$ ; a2:  $4.14616 \pm 0.230$

b1:  $-9.414 \pm 1.226$ ; b2:  $-8.225 \pm 0.318$

b3:  $-0.391 \pm 0.217$ ; b4:  $2.819 \pm 0.078$



$m_{\mu\mu}$  (GeV/c<sup>2</sup>)

Events per 0.025 GeV

Pb-Pb,  $\sqrt{s_{NN}} = 5.02$  TeV

$10 < p_T < 11$  GeV/c

centrality 70-90%

$2.5 < y < 4$

fitFuncNA60Pol2\_geant3\_2.40\_4.70

$N_{J/\psi} = 50 \pm 0$

Mass =  $3.0981 \pm 0.0088$

$\sigma_{J/\psi} = 0.0913 \pm 0.0050$

$N_{\psi'} = 7 \pm 0$

$\chi^2/\text{nDoF} = 0.39$

S/B = 14.11

S/  $\sqrt{S+B} = 1.04$

Fit Status = 4

Fit Validity : bad

Fit Cov Matrix Status = 2

p1: 0.20

p2: 1.58

p3: 0.16

p4: 0.19

p5: 1.07

p6: -0.02

t1: -0.55

t2: 2.06

Background Normalization factor:  $16.130 \pm 13.752$

a1:  $0.549 \pm 0.111$ ; a2:  $-0.16372 \pm 0.026$

b1:  $25.943 \pm 0.006$ ; b2:  $37.182 \pm 0.002$

b3:  $11.808 \pm 0.001$ ; b4:  $-4.477 \pm 0.000$

- +— Raw events
- +— Fitted  $J/\psi$  events
- +— Fitted  $\psi(2S)$  events
- - + - - Fitted background events
- +— Fitted  $J/\psi$   $\psi(2S)$  and background events

$m_{\mu\mu}$  (GeV/c<sup>2</sup>)

Events per 0.025 GeV

Pb-Pb,  $\sqrt{s_{NN}} = 5.02$  TeV

$10 < p_T < 11$  GeV/c

centrality 70-90%

$2.5 < y < 4$

```
fitfunc.CS2Exp_pp13_2.26_A30

N_{ps} = 6 ± 4

Mass = 3.1855 ± 0.0022

σ_{ps} = 0.0403 ± 0.0009

N_{b1} = 3 ± 0

χ² / ndof = 22.83

S/N = 15641.4073803886441739320203554695518747840173624285874278832772386228884312387352620629036676418762322589228588643454884432323731265763769820564.00

S/N = 10.37

Fit Status = 0

Fit Validity : good

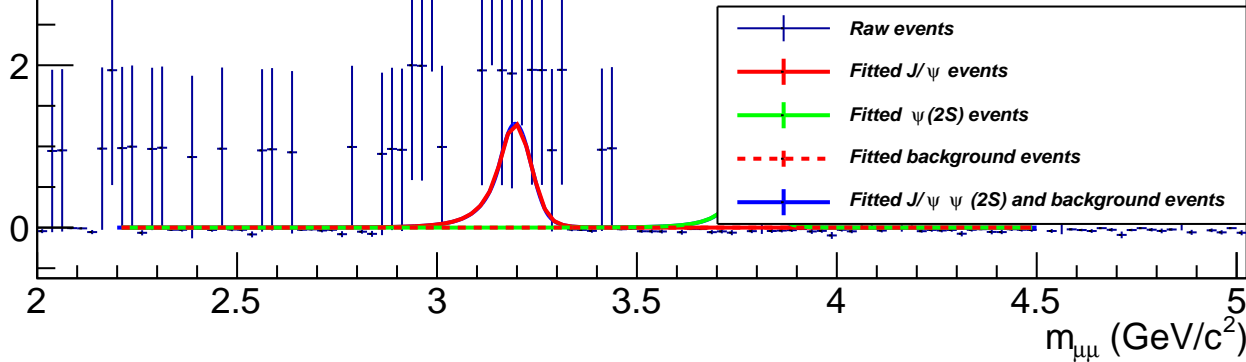
Fit Cov Matrix Status = 3

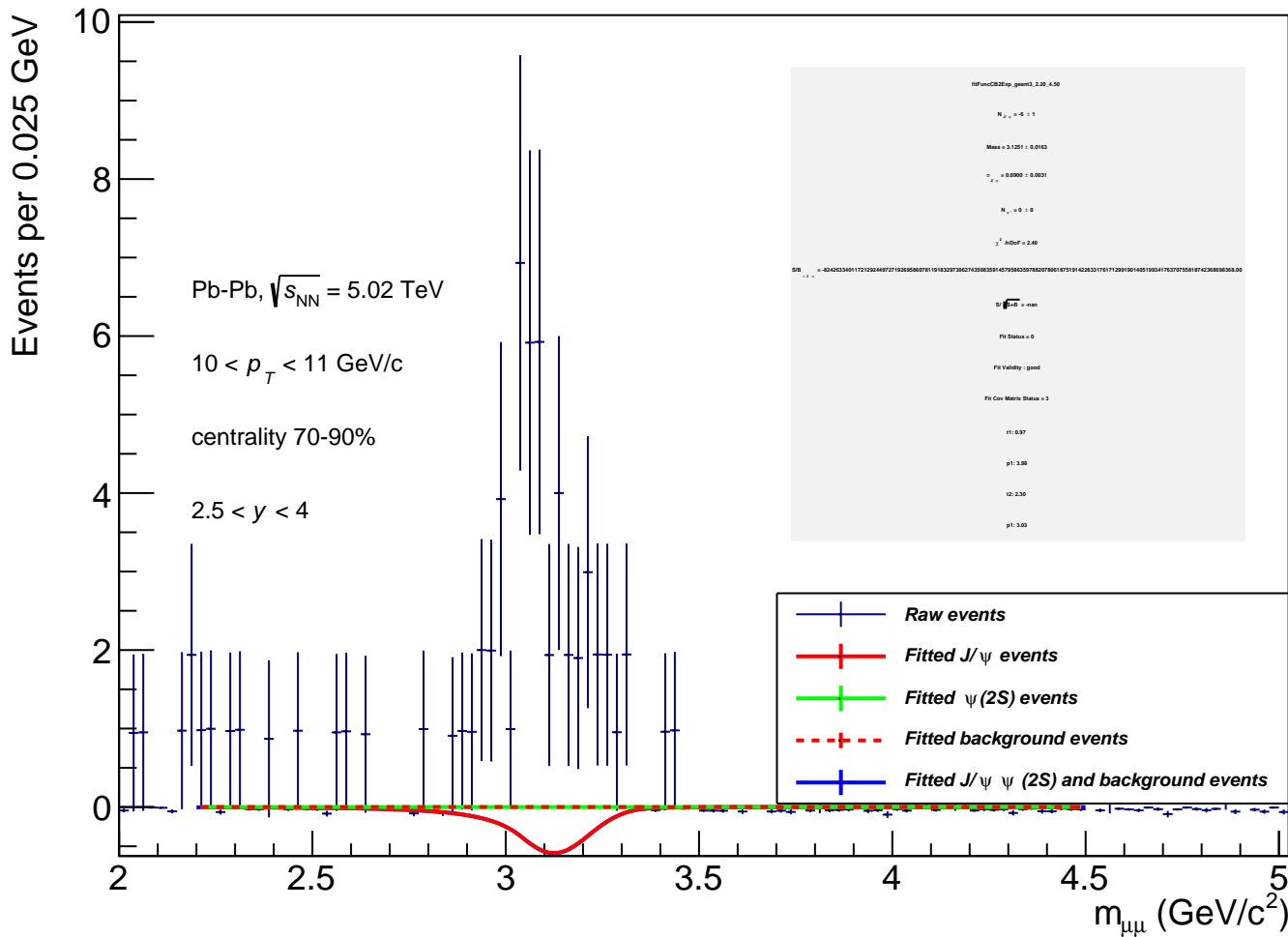
t1: 6.97

p1: 6.97

t2: 1.86

p1: 14.99
```





Events per 0.025 GeV

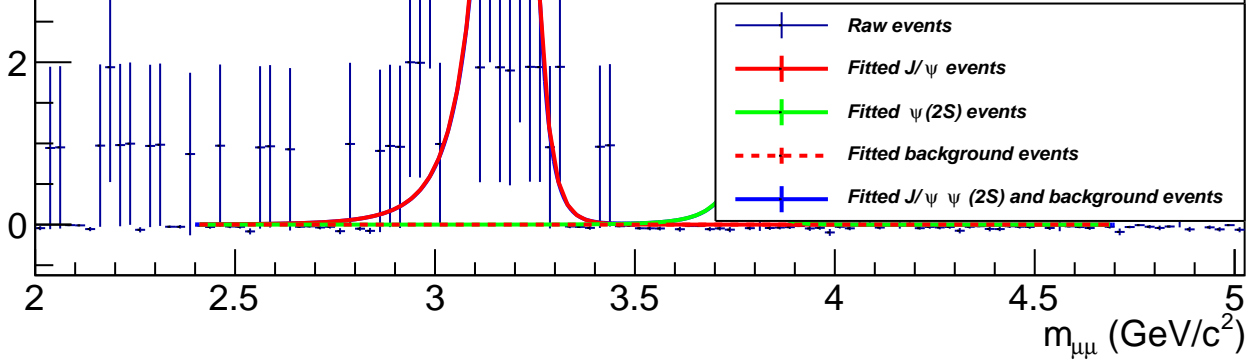
Pb-Pb,  $\sqrt{s_{NN}} = 5.02$  TeV

$10 < p_T < 11$  GeV/c

centrality 70-90%

$2.5 < y < 4$

**fitFuncCB2Exp\_pp13\_2.40\_4.70**  
 $N_{J/\psi} = 60 \pm 0$   
**Mass =  $3.1813 \pm 0.0011$**   
 $\sigma_{J/\psi} = 0.0495 \pm 0.0004$   
 $N_{\psi'} = 4 \pm 0$   
 $\chi^2/\text{nDoF} = 33.17$   
**S/B $_{\pm 3\sigma}$  = 20394418188652024137678585856.00**  
**S/  $\sqrt{S+B}$  = 1.18**  
**Fit Status = 4**  
**Fit Validity : bad**  
**Fit Cov Matrix Status = 1**  
t1: 0.97  
p1: 6.97  
t2: 1.86  
p1: 14.99



Events per 0.025 GeV

Pb-Pb,  $\sqrt{s_{NN}} = 5.02$  TeV

$10 < p_T < 11$  GeV/c

centrality 70-90%

$2.5 < y < 4$

**fitFuncCB2Exp\_geant3\_2.40\_4.70**

**$N_{J/\psi} = 7 \pm 4$**

**Mass =  $3.1852 \pm 0.0264$**

**$\sigma_{J/\psi} = 0.0400 \pm 0.0025$**

**$N_{\psi'} = 0 \pm 0$**

**$\chi^2/nDoF = 1.73$**

**$S/B_{\pm 3\sigma} = -40.31$**

**$S/\sqrt{S+B} = 0.41$**

**Fit Status = 0**

**Fit Validity : good**

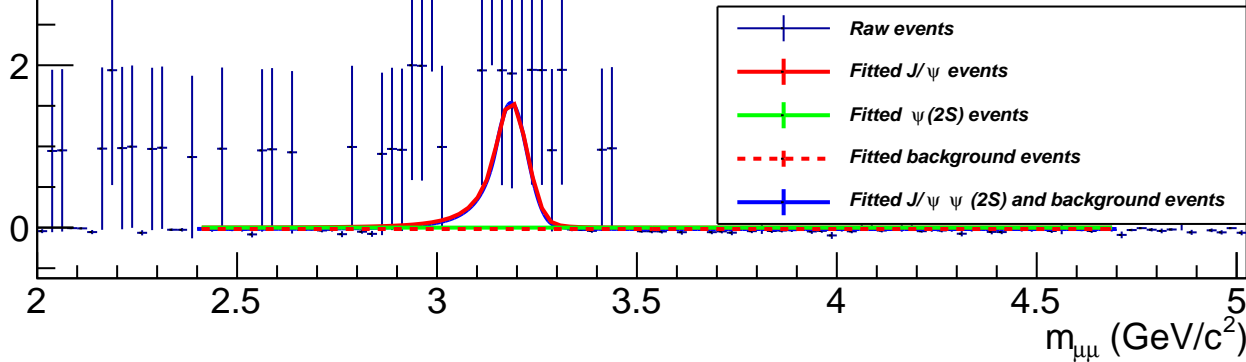
**Fit Cov Matrix Status = 3**

**t1: 0.97**

**p1: 3.98**

**t2: 2.30**

**p1: 3.03**





Events per 0.025 GeV

Pb-Pb,  $\sqrt{s_{NN}} = 5.02$  TeV

$10 < p_T < 11$  GeV/c

centrality 70-90%

$2.5 < y < 4$

```
fitfuncN40Exp_gauss1_2,30_4,50
N_{pT} = 4 ± 1
Mass = 3.0065 ± 0.0153
σ = 0.1000 ± 0.0027
N_{ψ} = 0 ± 0
χ² / doBdF = 2.32
S/B = -1942484669220922236381643621230615756031414427658530530304064789791963384353413327877021644166800478489100381071076152615889504.00
S/B = 1.1 ± 0.1
S/B = 1.1 ± 0.1
Fit Status = 0
Fit Validity : good
Fit Cov Matrix Status = 1
p1: 0.21
p2: 1.38
p3: 0.10
p4: 0.19
p5: 1.07
p6: -0.02
t1: -0.82
t2: 3.97
```

Raw events  
Fitted J/ψ events  
Fitted ψ(2S) events  
Fitted background events  
Fitted J/ψ ψ(2S) and background events

$m_{\mu\mu}$  (GeV/c<sup>2</sup>)

Events per 0.025 GeV

Pb-Pb,  $\sqrt{s_{NN}} = 5.02$  TeV

$10 < p_T < 11$  GeV/c

centrality 70-90%

$2.5 < y < 4$

```
fitFuncNA60Exp_geant3_2.40_4.70
NJ/ψ = -6 ± 1
Mass = 3.0999 ± 0.0190
σJ/ψ = 0.1000 ± 0.0037
Nψ = 0 ± 0
χ2/nDoF = 2.41
S/B3σ = -37231087015273193270128283194029106915844317773824.00
S/√(S+B) = -nan
Fit Status = 0
Fit Validity : good
Fit Cov Matrix Status = 3
p1: 0.21
p2: 1.38
p3: 0.10
p4: 0.19
p5: 1.07
p6: -0.02
t1: -0.82
t2: 2.07
```

—+— *Raw events*  
—+— *Fitted J/ψ events*  
—+— *Fitted ψ(2S) events*  
- - + - *Fitted background events*  
—+— *Fitted J/ψ ψ(2S) and background events*

$m_{\mu\mu}$  (GeV/c<sup>2</sup>)