Data Quality Check from $J/\psi \to \rho\pi$, K^*K, $\phi\pi^+\pi^-$ and $\omega\pi^+\pi^-$

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Outline

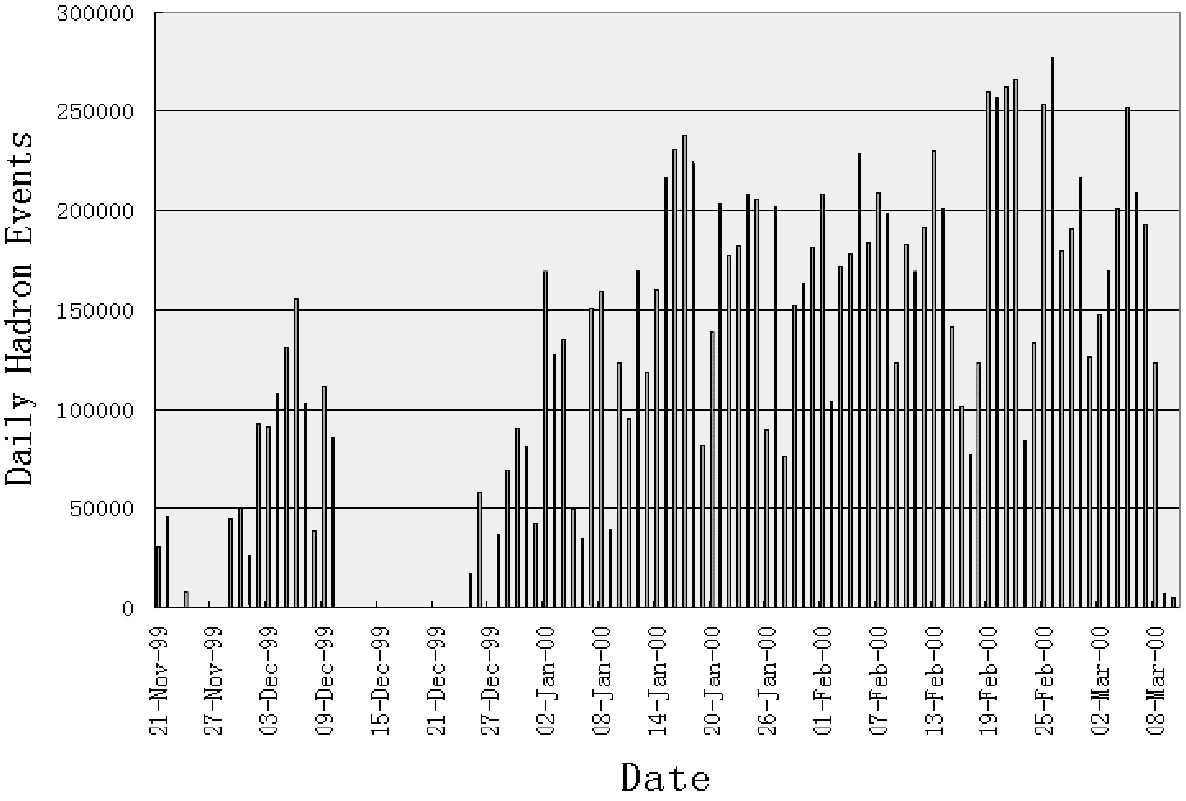
- Data
- $J/\psi \to \rho\pi$
- $J/\psi \to K^*K$
- $J/\psi \to \phi\pi^+\pi^-$
- $J/\psi \to \omega\pi^+\pi^-$
- Summary

I. Data

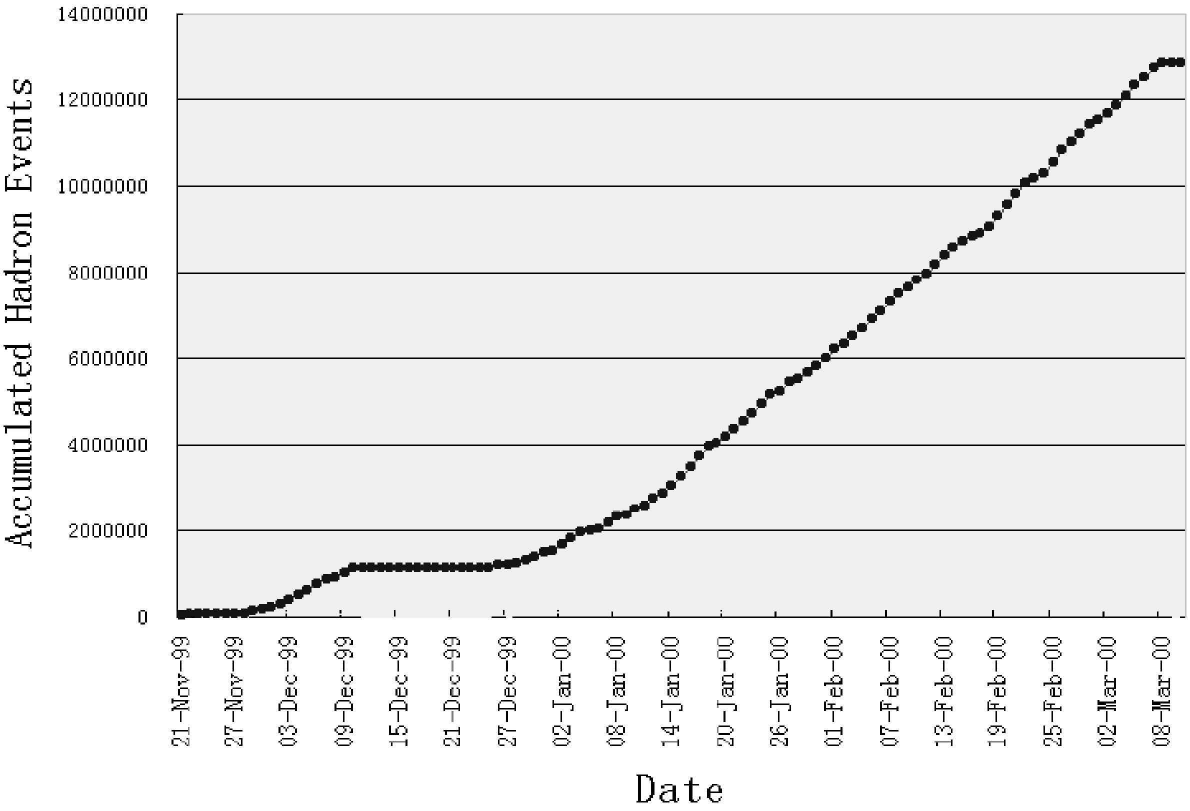
- Nov. 29, 1999 – Dec. 10, 1999 (J/ψ)
  Run 13531 - Run 13690
  ($\sim$ 1M had. events)
  MDC threshold 625, 1025

- Dec. 25, 1999 – March 8, 2000 (J/ψ)
  Run 13691 - Run 15442
  ($\sim$ 12M had. events)

- March 8, 2000 – March 11, 2000 (3.0 GeV)
  Run 15443 - Run 15489
  ($\sim$ 10K had. events, 34K bhabha, 1048 dimuon)



300000
250000
200000
150000
100000
50000
0
Daily Hadron Events
21-Nov-99
27-Nov-99
03-Dec-99
09-Dec-99
15-Dec-99
21-Dec-99
27-Dec-99
02-Jan-00
08-Jan-00
14-Jan-00
20-Jan-00
26-Jan-00
01-Feb-00
07-Feb-00
13-Feb-00
19-Feb-00
25-Feb-00
02-Mar-00
08-Mar-00
Date



14000000
12000000
10000000
8000000
6000000
4000000
2000000
0
Accumulated Hadron Events
21-Nov-99
27-Nov-99
03-Dec-99
09-Dec-99
15-Dec-99
21-Dec-99
27-Dec-99
02-Jan-00
08-Jan-00
14-Jan-00
20-Jan-00
26-Jan-00
01-Feb-00
07-Feb-00
13-Feb-00
19-Feb-00
25-Feb-00
02-Mar-00
08-Mar-00
Date

II. $J/\psi \to \rho\pi$

1. Data sample

Run 13700 – Run 15032

2. Events selection

$$N_{chrg} = 2$$

$$mfit = 2 \quad or \quad -19$$

$$|\cos\theta| < 0.85$$

$$R_{xy} < 0.015m, \quad |z| < 0.15m$$

$$\theta_{\gamma\pi} > 12^o$$

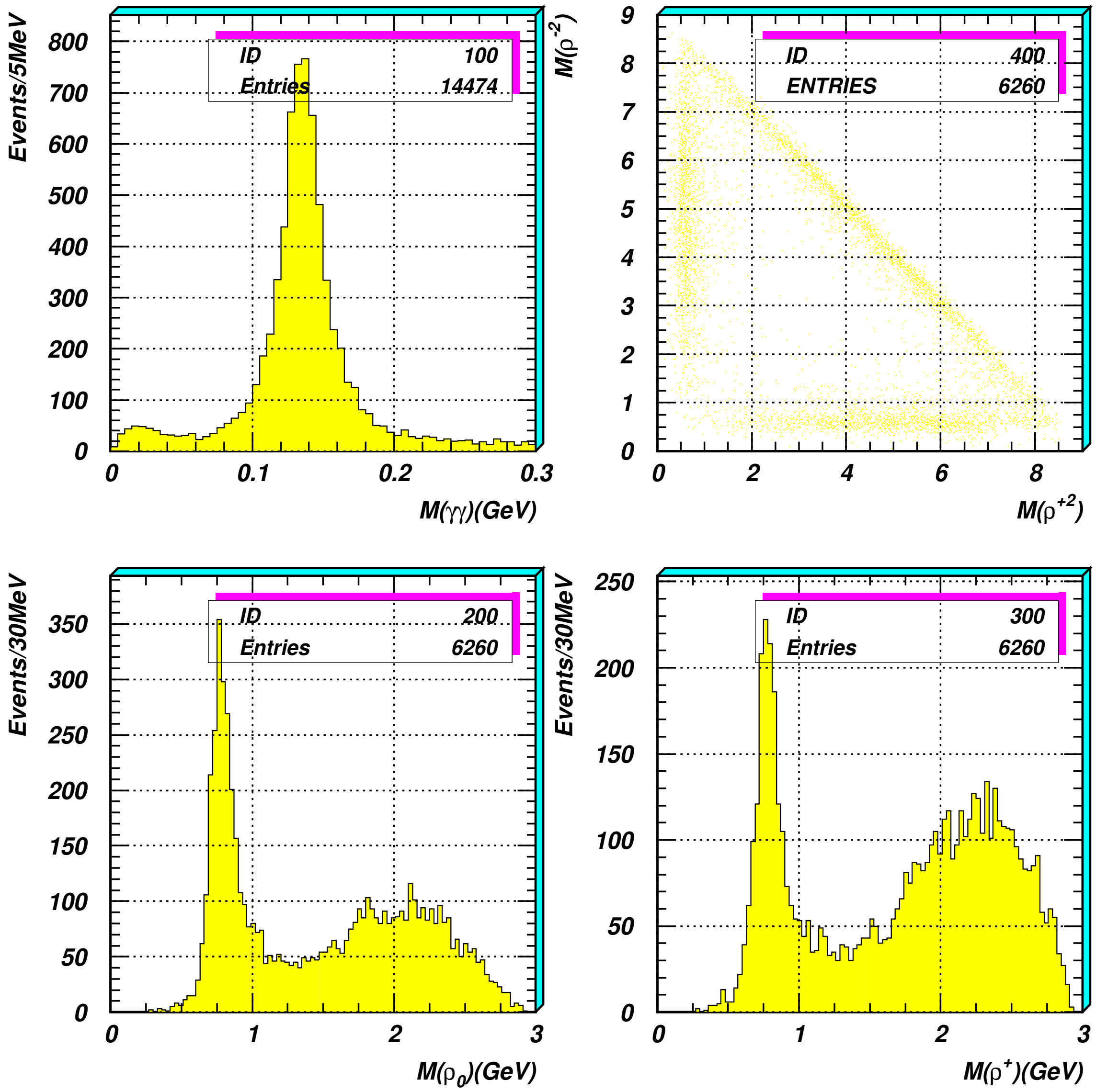
$$TOF \quad identifies \quad pions$$

$$\chi^2_{4C} < 20.0$$

$$|M_{\pi^0} - 0.135| < 0.06GeV$$

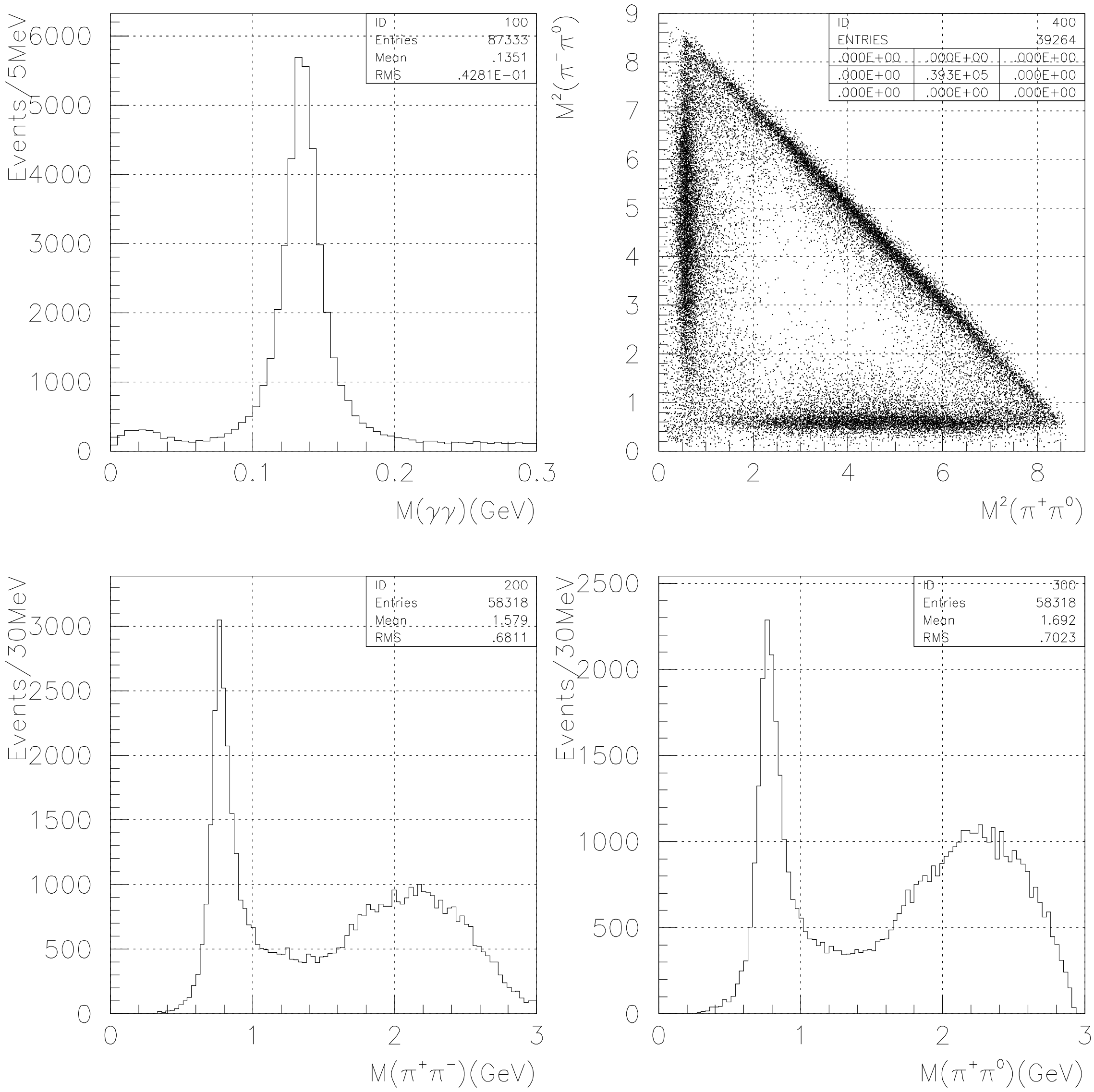
......

$$J/\psi \to \rho\pi$$



BESI data (Run462-961, $\sim$ 2.6M)

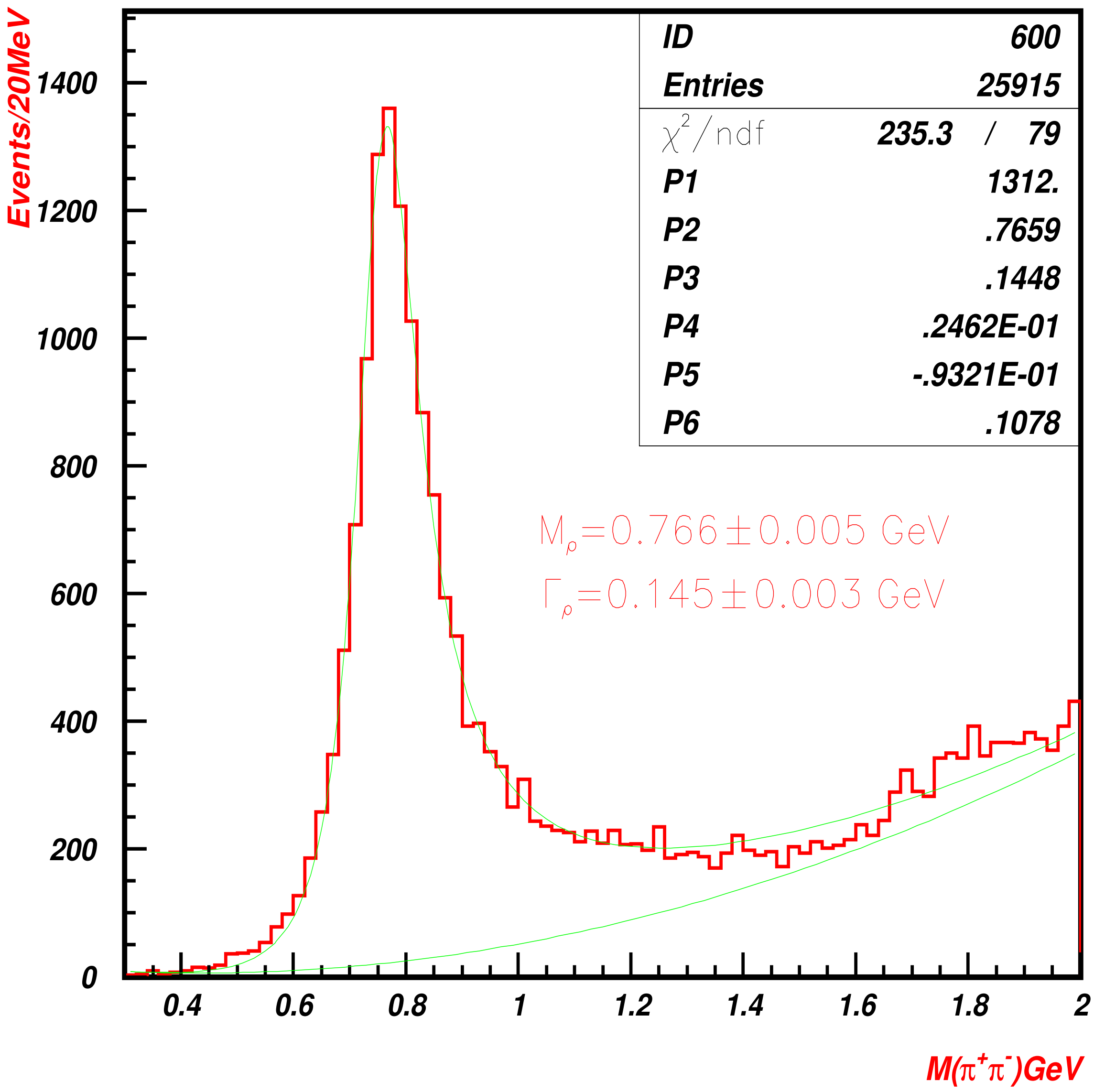
$$J/\psi \to \rho\pi$$



BESII data (Run13700-15032, $\sim$ 10M)

$J/\psi \to \rho\pi$

ρ mass fit



BESII data (Run13700-15032, $\sim$ 10M)

III. $J/\psi \to K^{*\pm}K^{\mp}$, $K^{*\pm} \to K_s^0\pi^{\pm}$

1. Data sample

Run 13700 – Run 15032

2. Events selection

$$N_{chrg} = 4$$

$$nneu < 5$$

$$mfit = 2 \quad or \quad -19$$

$$|\cos\theta| < 0.85$$

$$R_{xy} < 0.015m, \quad |z| < 0.15m$$

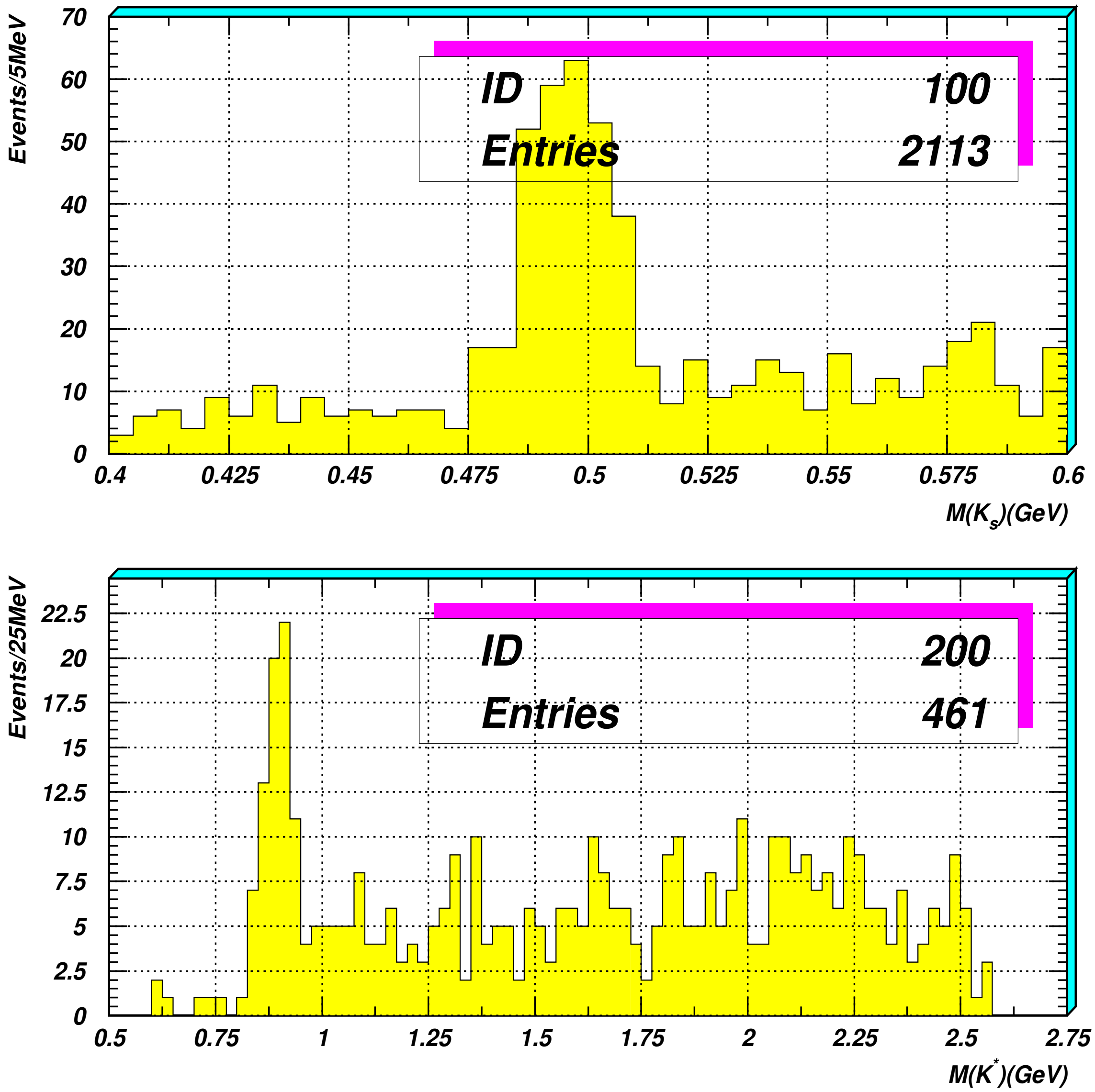
$$At\ least\ one\ \pi\ from\ TOF$$

$$\chi^2_{4C} < 20.0$$

$$|M_{K_s} - 0.498| < 0.06GeV$$

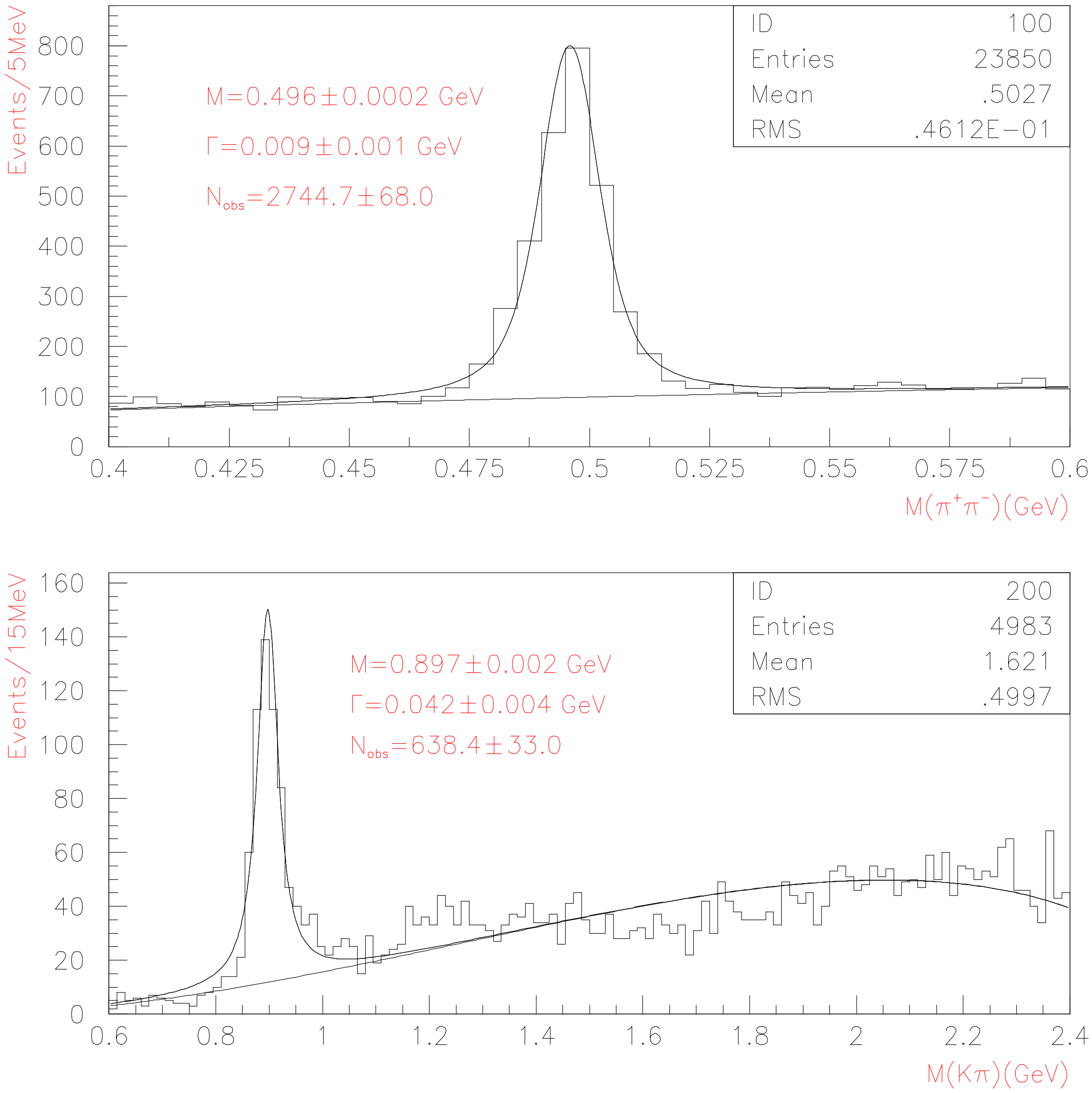
......

$$J/\psi \to K^{*\pm} K^{\mp},\ K^{*\pm} \to K_s^0 \pi^{\pm}$$



BESI data (Run462-961, $\sim$ 2.6M)

$$J/\psi \to K^{*\pm} K^{\mp},\ K^{*\pm} \to K_s^0 \pi^{\pm}$$



BESI data (Run13700-15032, $\sim$ 10M)

IV. $J/\psi \to \phi\pi^+\pi^-$, $\phi \to K^+K^-$

1. Data sample

Run 13700 – Run 14958

2. Events selection

$$N_{chrg} = 4$$

$$mfit = 2 \quad or \quad -19$$

$$|\cos\theta| < 0.85$$

$$R_{xy} < 0.015m, \quad |z| < 0.15m$$

$$At\ least\ one\ kaon\ from\ TOF$$

$$\chi^2_{4C} + \chi^2_{TOF}$$

$$\chi^2_{4C} < 25.0$$

$$|M_\phi - 1.019| < 0.015GeV$$

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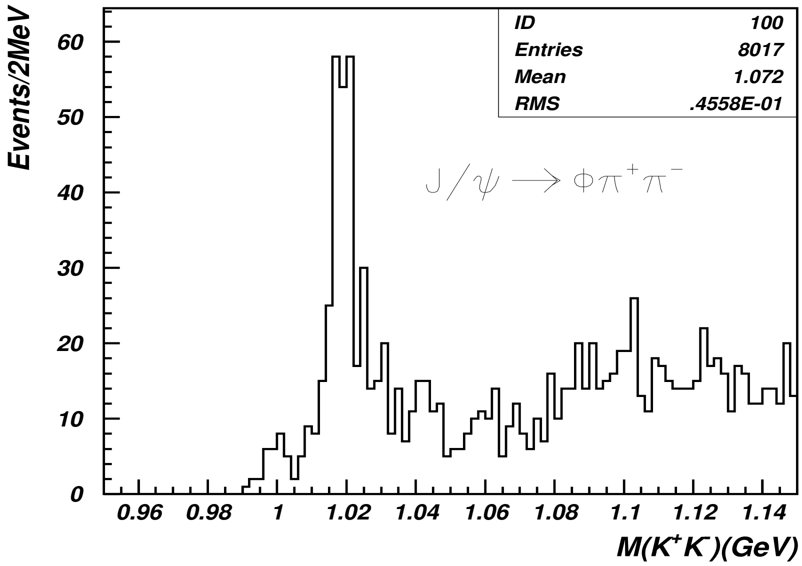
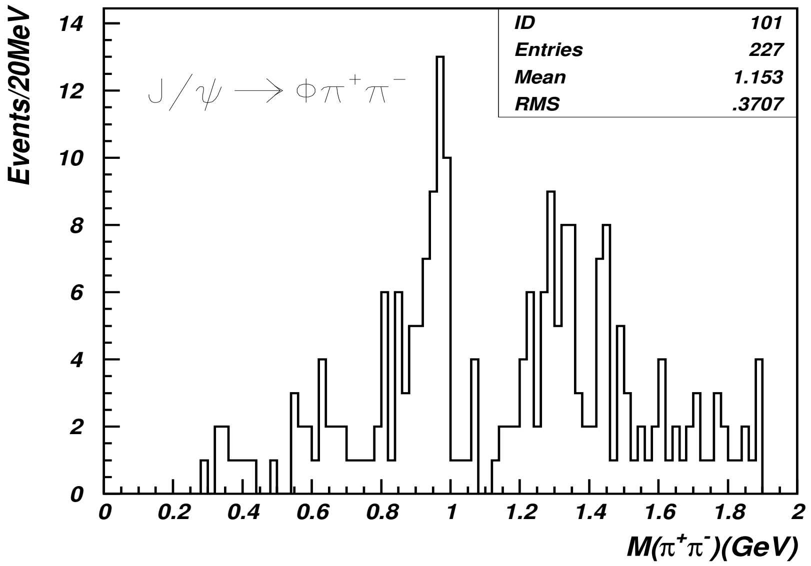
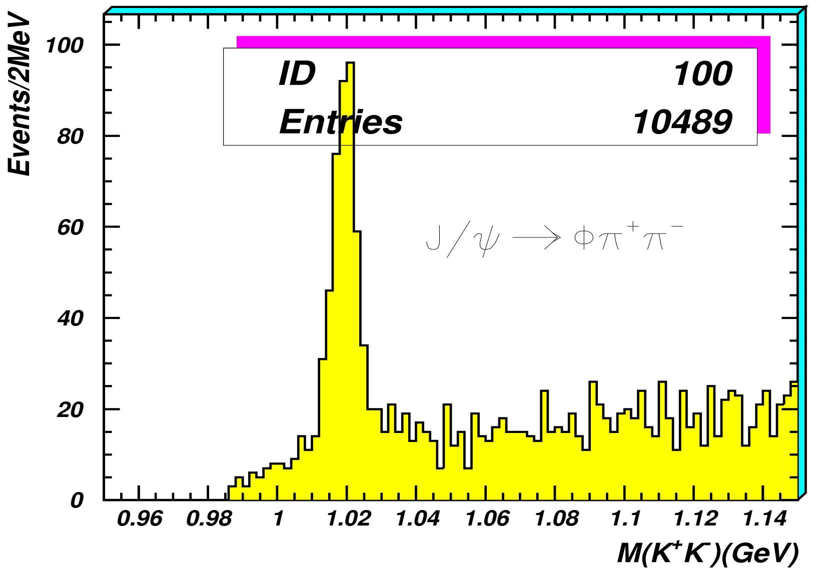
$$J/\psi \to \phi\pi^+\pi^-,\ \phi \to K^+K^-$$

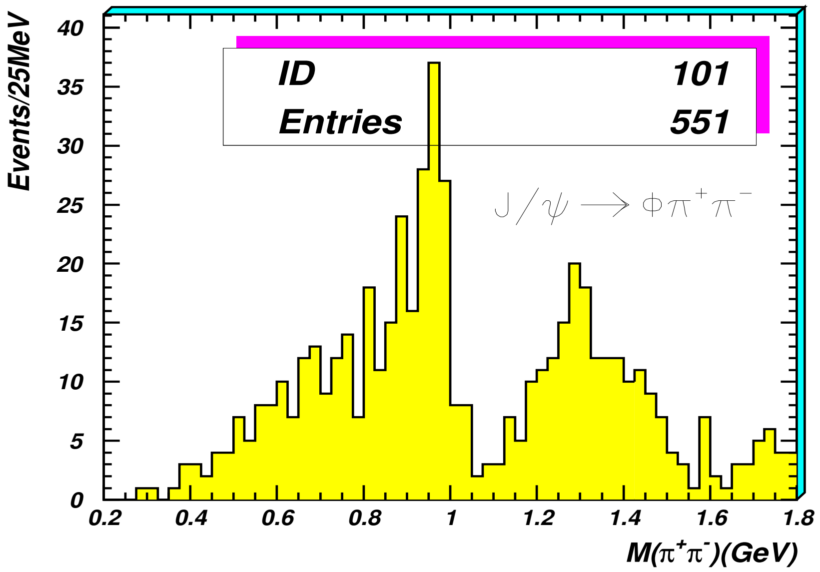




BESI data (Run462-3738, $\sim$ 7.8M)

$$J/\psi \to \phi\pi^+\pi^-,\ \phi \to K^+K^-$$





BESI data (Run13700-14958, $\sim$ 9.4M)

V. $J/\psi \to \omega\pi^+\pi^-$, $\omega \to \pi^+\pi^-\pi^0$

1. Data sample

Run 13700 – Run 15032

2. Events selection

$$N_{chrg} = 4$$

$$1 < N_{neu} < 6$$

$$mfit = 2 \quad or \quad -19$$

$$|\cos\theta| < 0.85$$

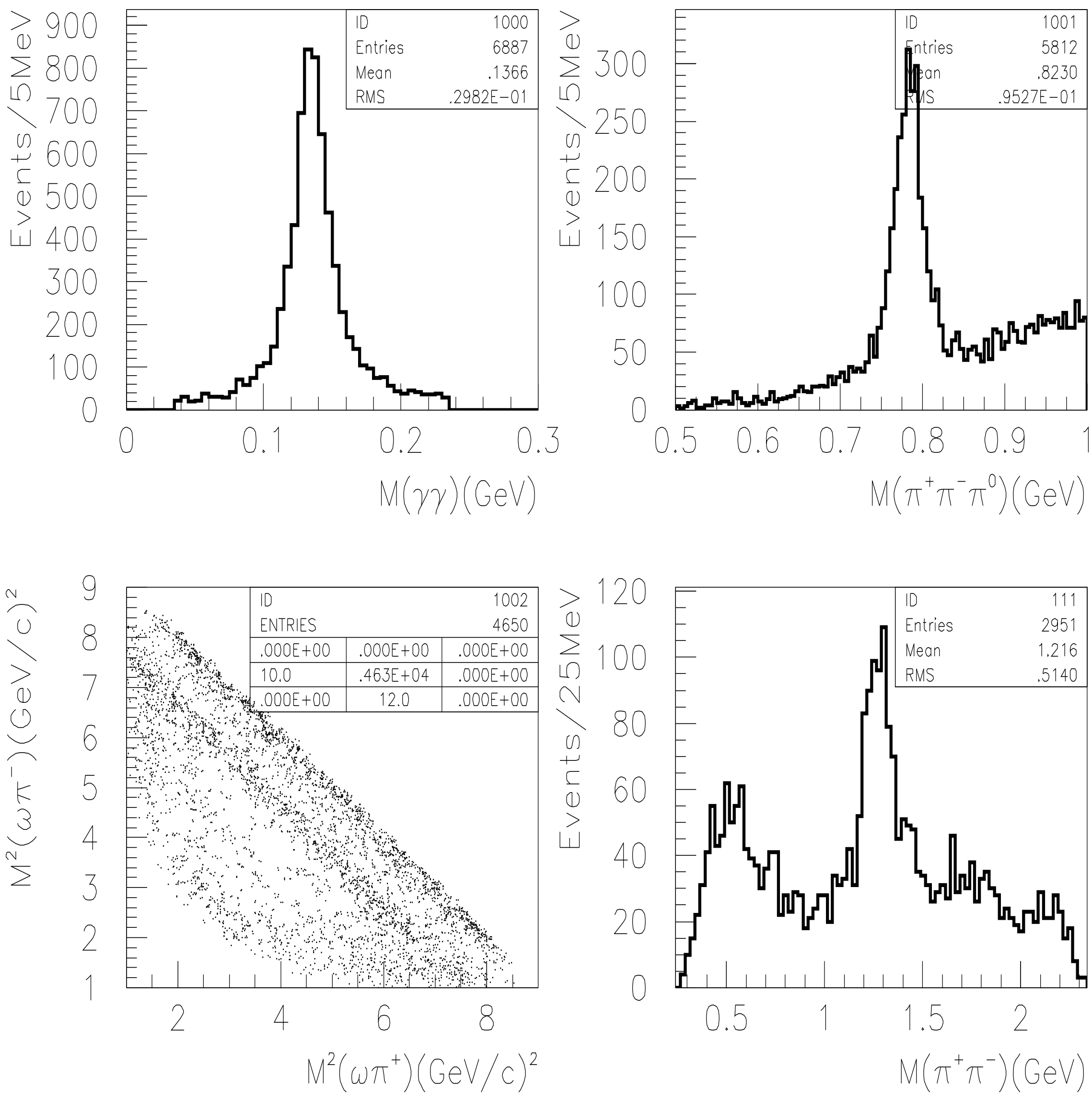
$$R_{xy} < 0.015m, \quad |z| < 0.15m$$

$$At\ least\ one\ \pi\ from\ TOF$$

$$\chi^2_{4C} < 25.0$$

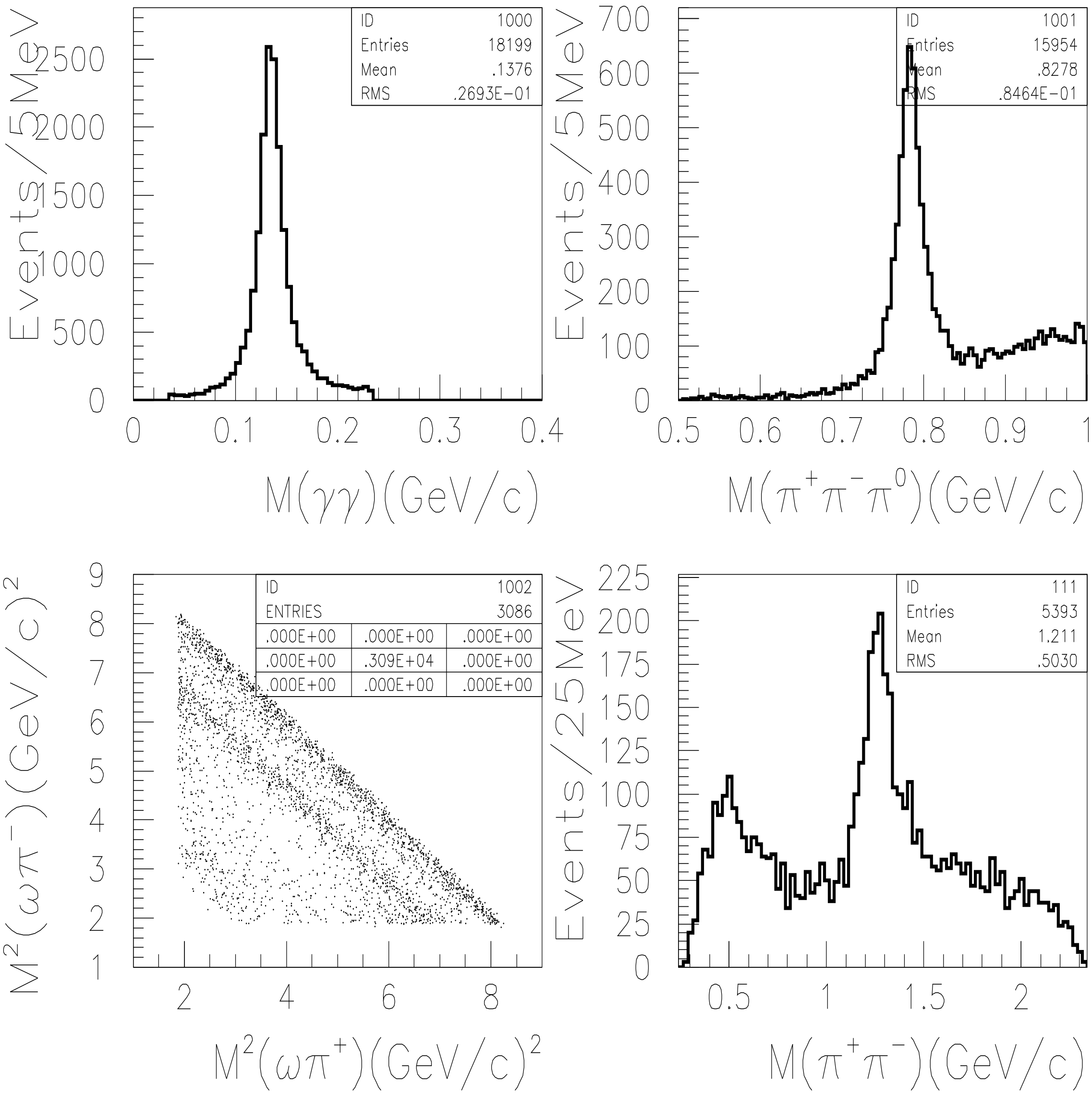
......

$$J/\psi \to \omega\pi^+\pi^-,\ \omega \to \pi^+\pi^-\pi^0$$



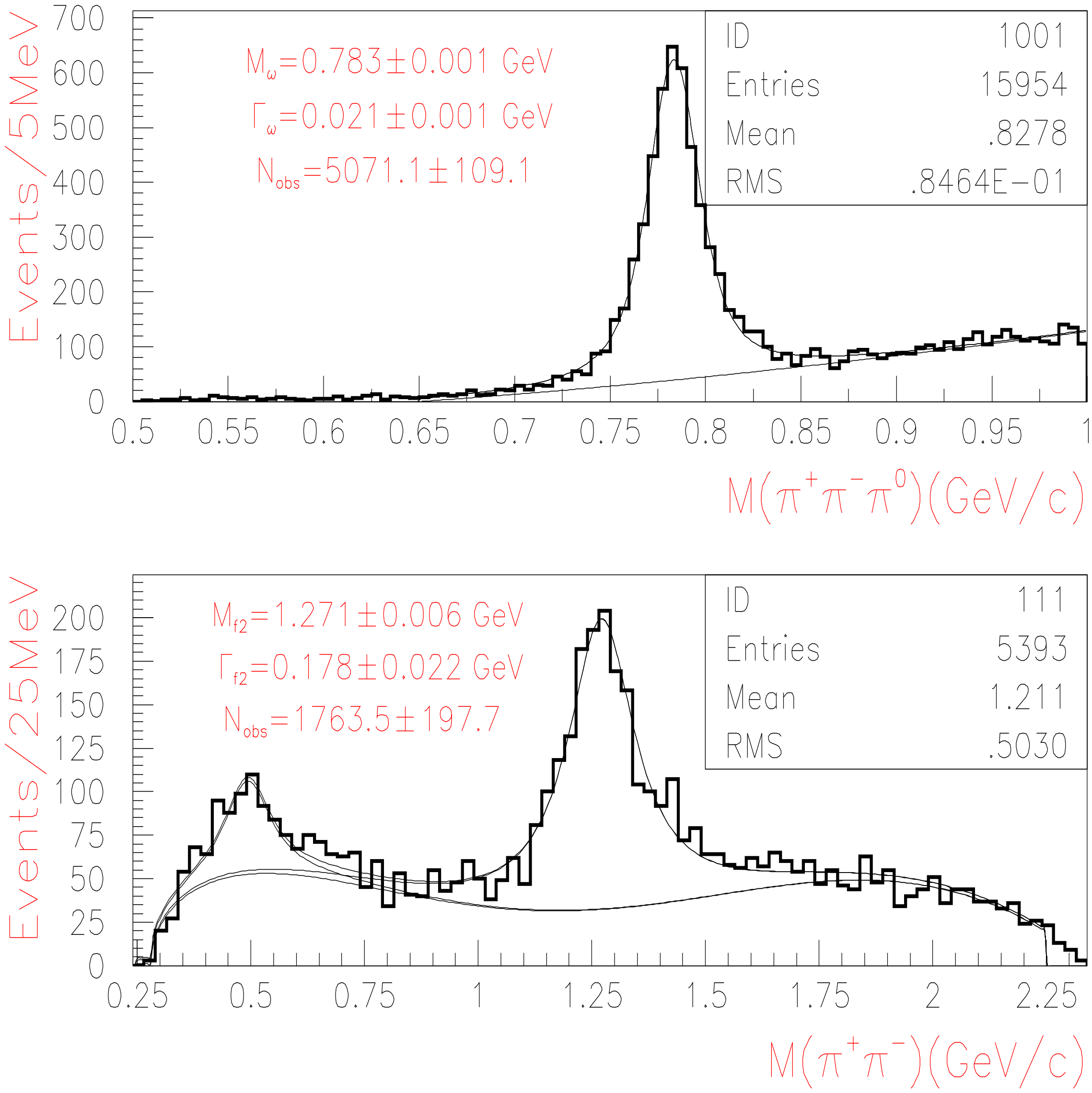
BESI data (Run462-3738, ~ 7.8M)

$$J/\psi \to \omega\pi^+\pi^-,\ \omega \to \pi^+\pi^-\pi^0$$



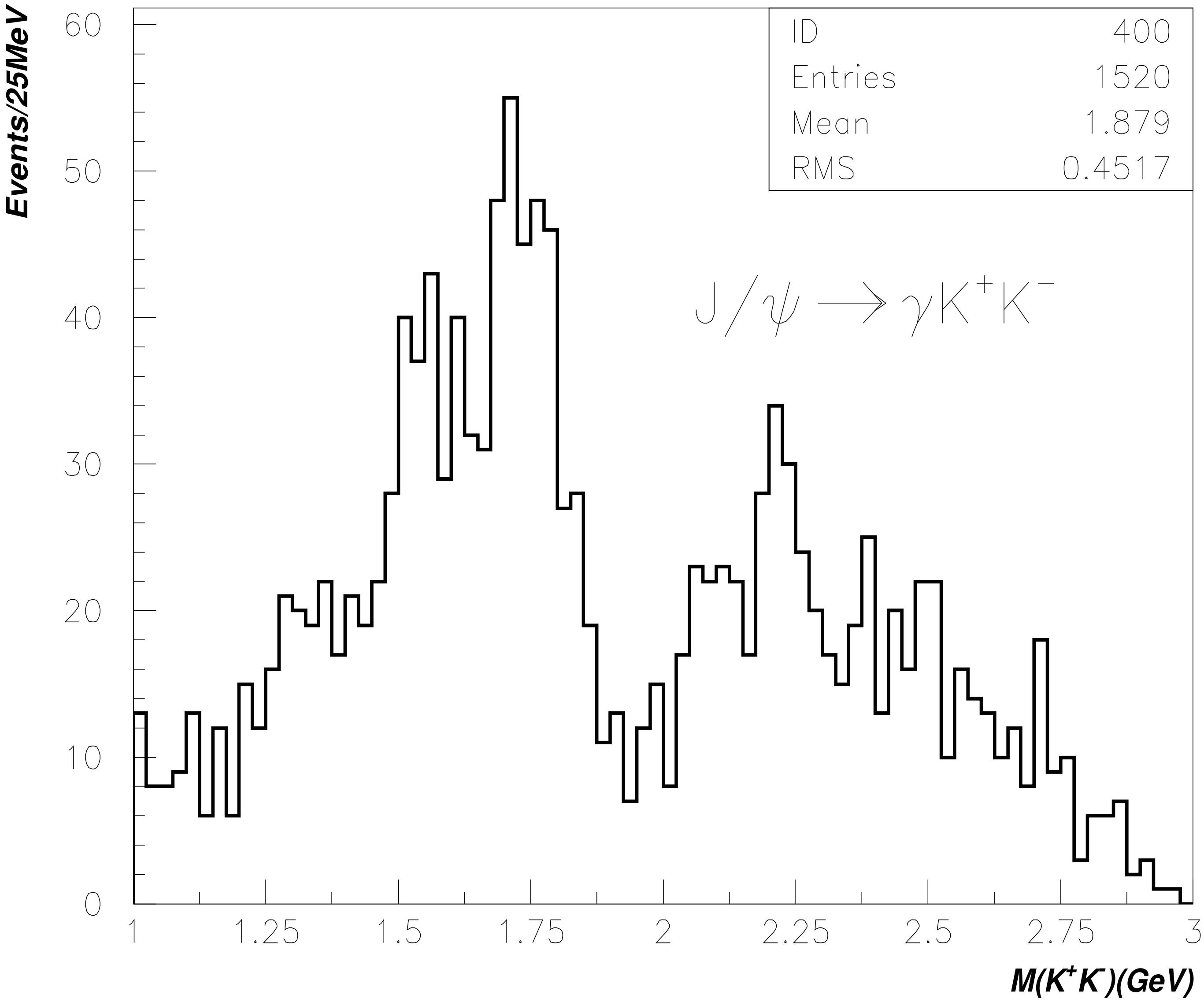
BESI data (Run13700-15032, $\sim$ 10M)

$$J/\psi \to \omega\pi^+\pi^-,\ \omega \to \pi^+\pi^-\pi^0$$



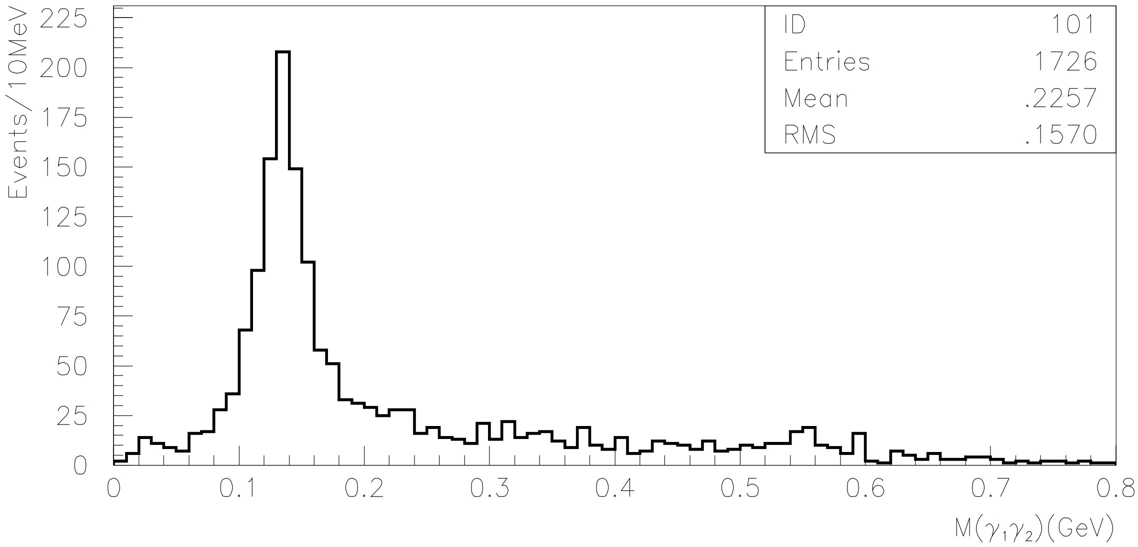
BESI data (Run13700-15032, $\sim$ 10M)

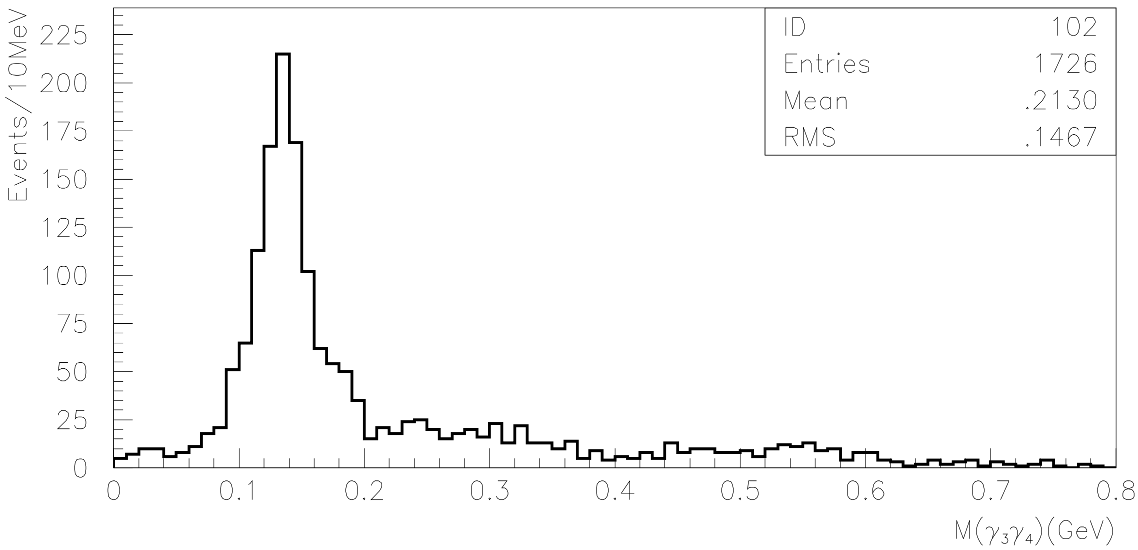
$$J/\psi \to \gamma K^+ K^-$$



BESI data (Run13700-14884, $\sim$ 9.4M)

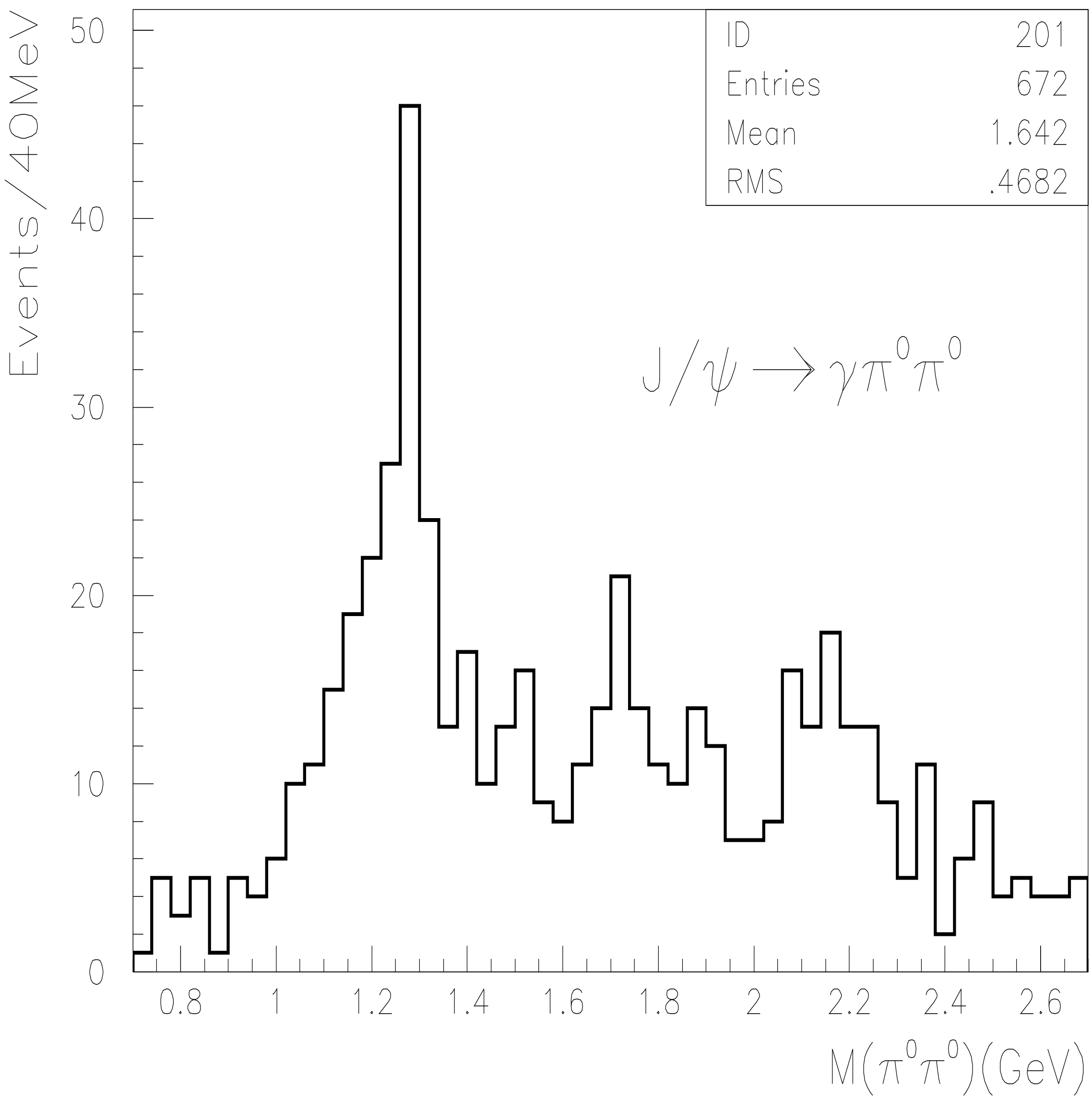
$J/\psi \to \gamma\pi^0\pi^0$





BESI data (Run13700-15032, $\sim$ 10M)

$J/\psi \to \gamma\pi^0\pi^0$



BESI data (Run13700-15032, $\sim$ 10M)

VI. Summary

- Efficiency is much higher.

- Need BESII telesis.

- Need dE/dX correction, magnetic field correction ...

- The estimation of J/ψ total number.