Determination of the number of J/ψ events with inclusive J/ψ decays[*]

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strategy

- using inclusive Jpsi decays

  - detection efficiency of inclusive Jpsi decays can be extracted directly from the data sample taken at the peak of Psi(2S)

$$N_{J/\psi} = \frac{N_{\text{sel}} - N_{\text{bg}}}{\epsilon_{\text{trig}} \times \epsilon_{\text{data}}^{\psi(3686)} \times f_{\text{cor}}}$$

$$f_{\text{cor}} = \frac{\epsilon_{\text{MC}}^{J/\psi}}{\epsilon_{\text{MC}}^{\psi(3686)}}$$

- Nsel: number of inclusive Jpsi events surviving selections in Jpsi data
- Nbg: number of background events estimated with continuum data
- \epsilon_{trigger}: trigger efficiency
- \epsilon_data(psi2S) : detection efficiency of inclusive Jpsi decays in Psi(2S) data

Xin

- In the equation to get the $N_{J/\psi}$, why the f_{cor} is expected to be unity approximately?

- Answer:
  - limited phase space
  - influence from detection efficiency

Yuhang

- In the part of inclusive J/ψ selection criteria, it says : "The charged tracks are required to be detected in the MDC within a polar angle range of|cosθ| < 0.93, and to have a momentum of p < 2.0 GeV/c" .

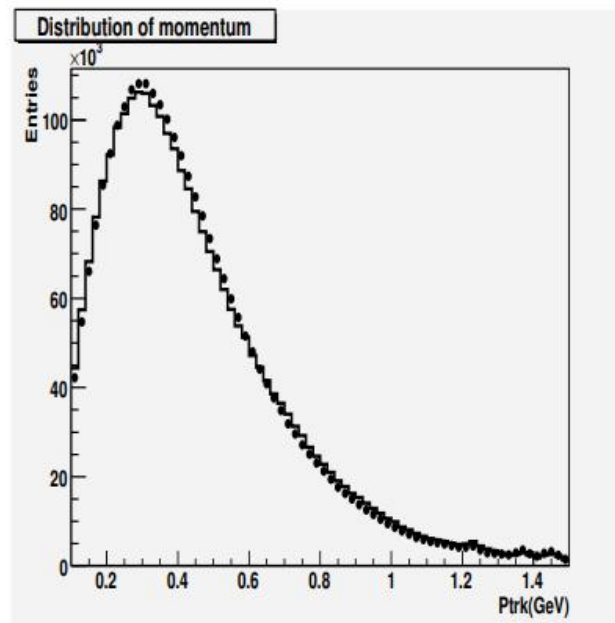   Why is the momentum of p < 2.0 GeV/c?

Figure 8: The momentum distribution for charged tracks of selected events in J/ψ decays. The histogram is for MC and dots with error bars for data

shan

- My question is "It is further required
- that the energy of the second most energetic
- shower is between 1.2 and 1.6 GeV and that the
- polar angles of the two showers are in the range
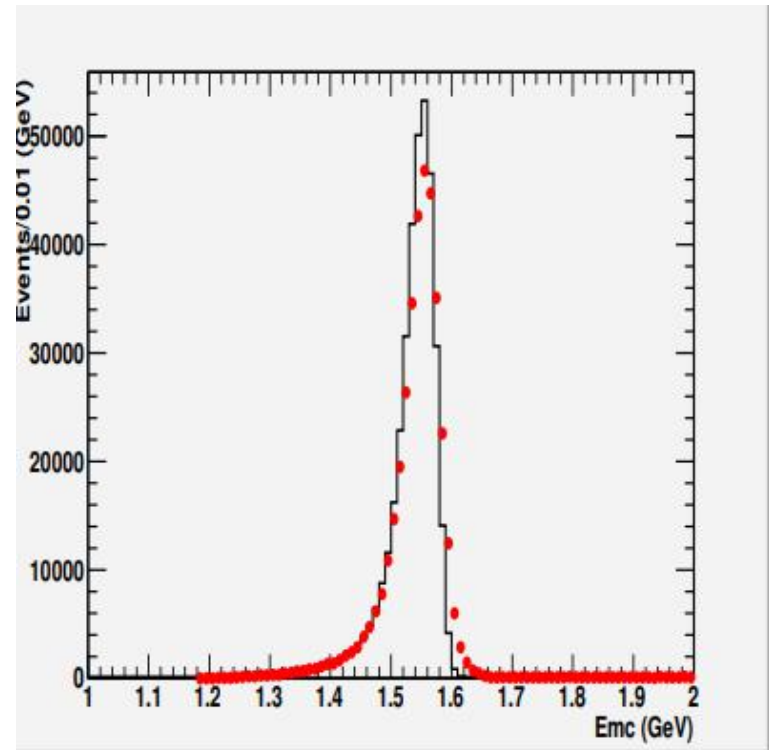- $|\cos\theta| < 0.8$."
- How to get the range of 1.2-1.6 GeV ?

Figure 14: The distribution of deposited energy in EMC of photon in $e^+e^- \rightarrow \gamma\gamma$ for data(error) and MC simulation(histogram).

Yuzhen

- As Table 3 shown, why is the MC module uncertainty of 2012 larger than 2009, while most of them are better than 2009?

- Good Question
- not clear to me, and could not find any answer from the HyperNews pages.