

Light, Charmonium & Charmonium-like exotics meson spectroscopy working group

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Agenda

- **Clarification of numbers**
 - Summary of the issue (Frank)
 - Detailed calculation, more details (Elisabetta)
 - Procedure

- **Round table discussion**

- **Note summarising status of relased results**
 - D_s
 - X scan
 - ...

Clarification of numbers -- Why discussion needed?

- **PANDA**, assume $\sigma(pp \rightarrow X(3872))=50$ nb
- **statistics** ~ 130 (1300) per day on peak for $\mathcal{L}=2 \times 10^{31}$ (10^{32}) $\text{cm}^{-2} \text{s}^{-1}$
- **efficiency** $\sim 50\%$ (4 charged, exclusive)
- high **boost** $\beta_{\text{cms}}=0.89$ (fixed target) $\rightarrow \beta\gamma=1.95$
- **mass resolution** ~ 50 -100 MeV (unfitted)

1) Soeren, Worms 2014

- Panda is an „X(3872) factory“
- $\simeq 700$ events per day in high luminosity mode
- $\simeq 70$ events per day in high resolution mode (assuming 50 nb)

2) Soeren, Uppsala 2015

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1') Marc, Uppsala, 2015

- mini-X(3872) factory:
- 7000 events/day expected @ $L = 2 \times 10^{32}$
- extrapolation @ $L = 10^{31}$: 350 X(3872)/day

2') Elisabetta, draft Giessen

Clarification of numbers -- Why discussion needed?

=> Basically an issue of a factor of 2

"Discrepancy understood:

-> Fwd spectrometer not included in original study by M.Galuska

Thus, officially correct value:

- Panda is an „X(3872) factory“
 - $\simeq 700$ events per day in high luminosity mode
 - $\simeq 70$ events per day in high resolution mode (assuming 50 nb)

**until the study has been repeated including the FwdSpectro
-> to be released then**

What numbers to be relased in general?

- Numbers on projected X,Y,Z etc, are not basic PANDA numbers
- Usually, the result of basic PANDA numbers (e.g. efficiencies, Lumi's etc) with other numbers like BR, cross-sections, provided "from outside"

Proposal to PubCom, or lets say our interpretation of
Publication policy addendum 9:

=> Focus on correct PANDA numbers and update them when needed

Still we need (all) to understand our numbers and estimation e.g.
of projected numbers on X,Y,Z etc.

What numbers to be relased in general?

→ Two (three) issues on input for calculation:

a) Nb of produced $Y(4260)$ in Panda (Charm13 proceeding)

b) BR: $Y(4260) \rightarrow Z(3900)$ by BESIII

c) BR: $X(3872) \rightarrow X J/\psi \pi \pi$ not anymore 10% but ~5% (Zhiqing' comm

b) BR: $Y(4260) \rightarrow Z(3900)$

-> as already prediscussed with Soren & Elisabetta:

NOT precisely correct: Assuming exclusive $Y(4260)$ production at peak

-> change to upper limit

a) Nb of produced $Y(4260)$

-> Don't understand....., Assumption:

partial width ($Y \rightarrow \text{ppbar}$) = partial width ($J/\psi \rightarrow \text{ppbar}$) ?!

-> **Why this can be assumed?**

c) BR: $X(3872) \rightarrow X J/\psi \pi \pi$ not anymore 10% but ~5% (Zhiqing' comment

Interestingly, the updated BR compensates roughly our gain in acceptance

(FwdSpectro)