Analysis of $\gamma\gamma \to J/\psi\gamma$

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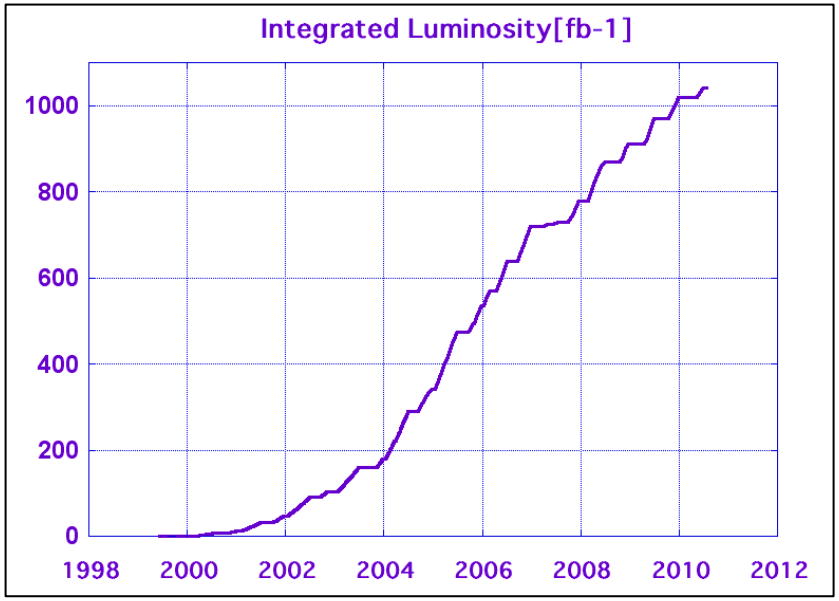
Short presentations

Poster number: P3

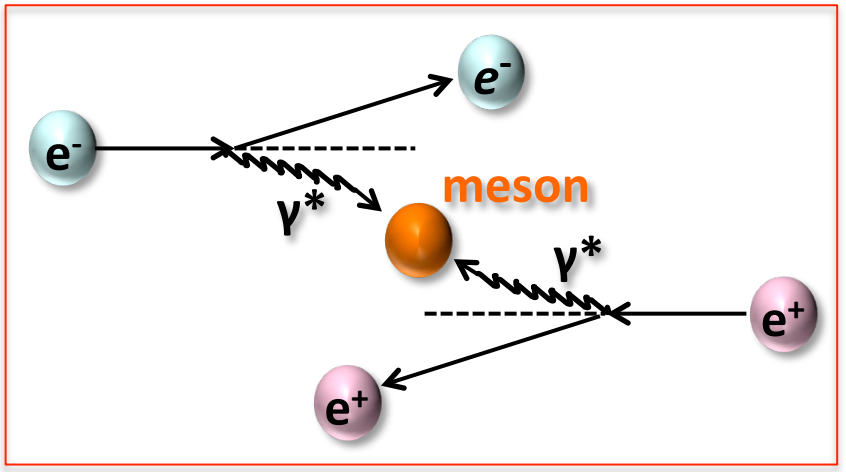
Data sample for analysis

- Belle experiment at the asymmetric e^+e^- collider
- The about 1000fb^{-1} data sample can be used.



Target of analysis process

- Measuring a cross section of meson at the two-photon process
- The two-photon decay width($\Gamma_{\gamma\gamma}$), which gives information of internal structure of produced meson, is estimated.

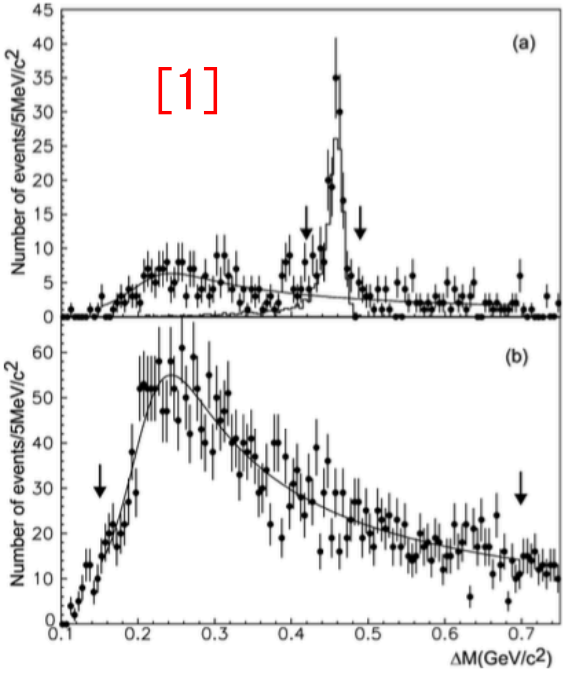


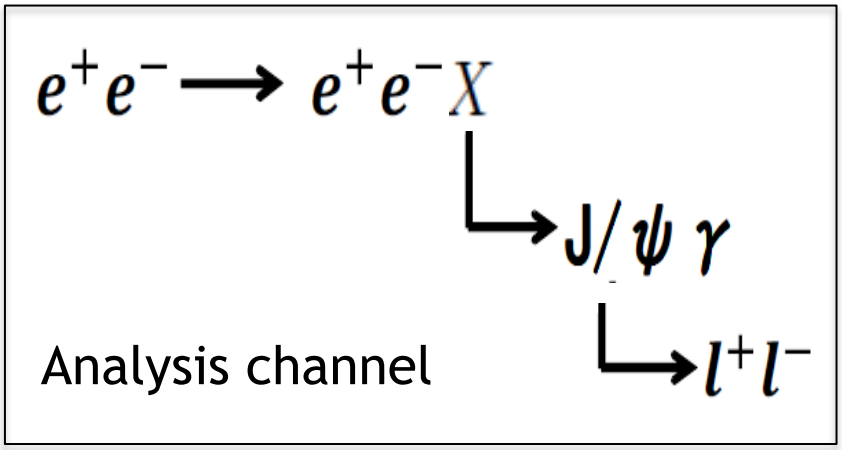
Meson production from two-photon process

By analyzing the channel of $\gamma\gamma \rightarrow J/\psi\gamma$, $J/\psi \rightarrow l^+l^-$ (l=e or μ),
We plan to perform the following:

- More precise measurement of $\chi_{c2}(1P)$
  (Update of the Belle previous research[1])

- Search for
  the other charmonium(-like) states





In the Belle previous research,
$\gamma\gamma \rightarrow \chi_{c2}(1P) \rightarrow J/\psi\gamma$ was analyzed
by using 32.6fb^{-1} data sample.

➢ More precise measurement of $\chi_{c2}(1P)$

- The P-wave charmonium is close to the boundary between perturbation and non perturbation QCD.

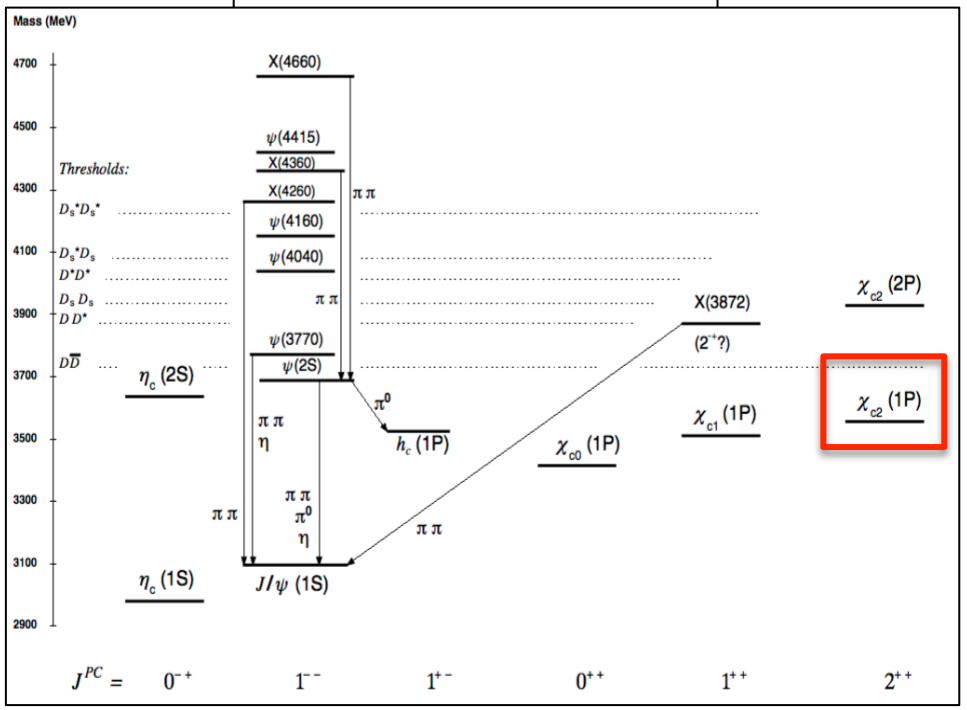
- Various theories predict the value of $\Gamma_{\gamma\gamma}(\chi_{c2}(1P))$ to be within the range 0.28-0.93 keV[2]. The precise measurement will help understanding of quarkonium systems.

➢ Search for the other charmonium(-like) states

- In the Belle previous research, the statistics have not been sufficient to measure charmonium states except $\chi_{c2}(1P)$.

- There is a possibility of searching for or measuring the other some charmonium(-like).

Charmonium-system



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- We make MC samples $\gamma\gamma \rightarrow X$(Assumed charmonium state)$\rightarrow J/\psi\gamma$ to estimate the detection efficiency for the signal process.

- In the poster presentation, we discuss the purpose and method of the analysis and show the result of the feasibility study using MC samples of $\gamma\gamma \rightarrow X \rightarrow J/\psi\gamma$.

Please come to our space for the poster!!

Thank you!!