Publication Presentation

Photoproduction J/ψ Detection and Physics with ECCE

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Xinbai Li

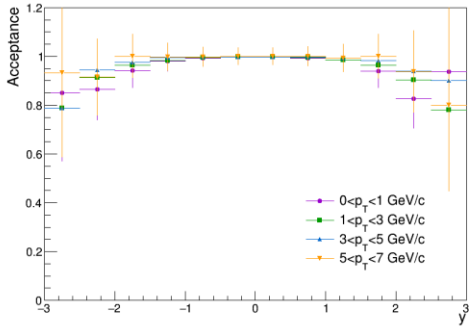
Overleaf:[overleaf_paper_11]

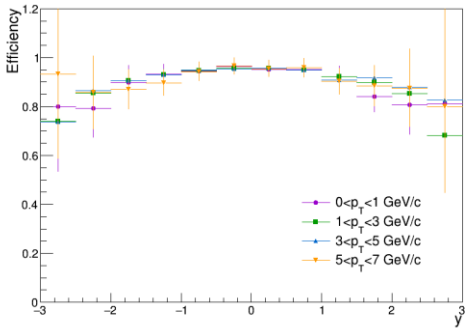
Publication State

- Consist of 15 figures and 1 Tables, 9 pages.
- Adjust the figure format for two columns.
- Final check.
- We plan to release the paper draft this week for consortium review.

J/ψ Measurement

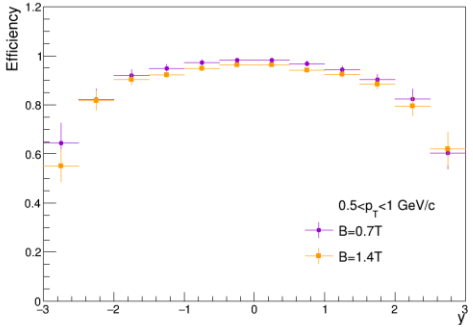
- Exclusive photo-produced J/Psi measurement detection simulation.

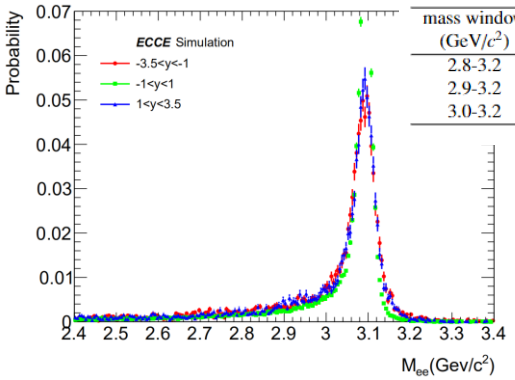




From homework

- Magnitude strength effect and tail effect. (table for detail)

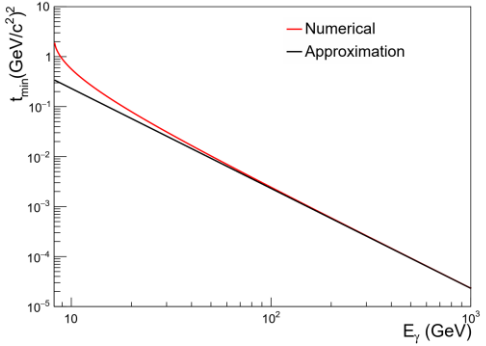


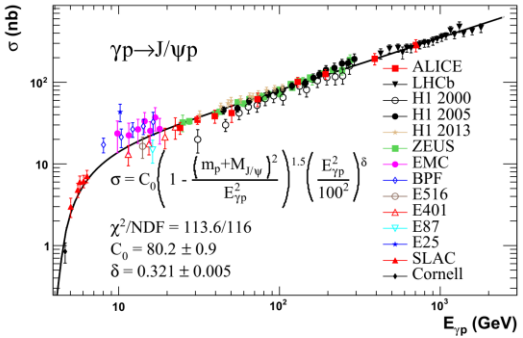


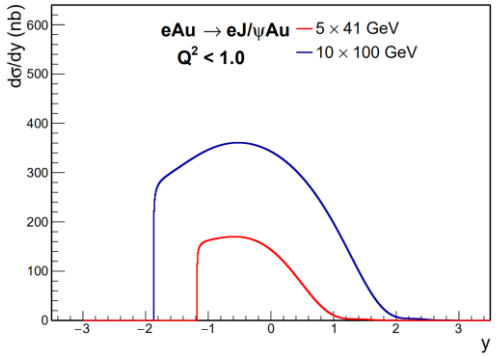
mass window (GeV/c^2)	$-3.5 < y < -1$	$-1 < y < 1$	$1 < y < 3.5$
2.8-3.2	0.887	0.925	0.890
2.9-3.2	0.833	0.886	0.836
3.0-3.2	0.743	0.814	0.730

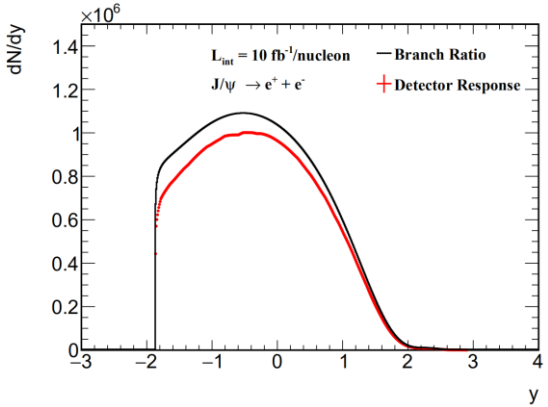
Cross section and statistic

- eSTARLight based theoretical cross section with two improvements.



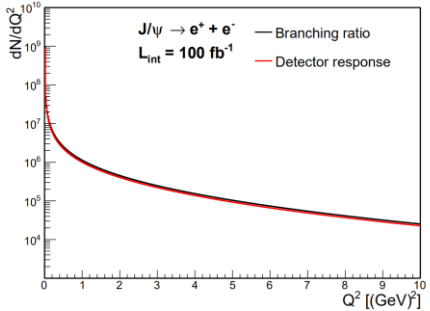






Cross section and statistic

- Also Q^2 dependence and t dependence.



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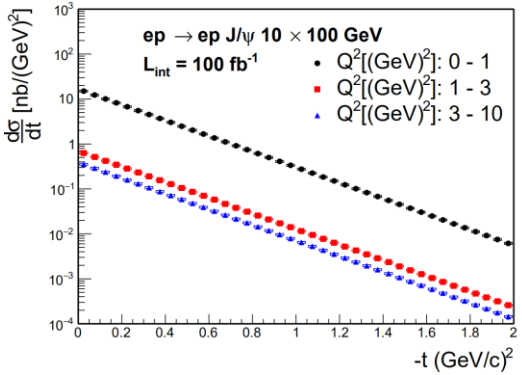
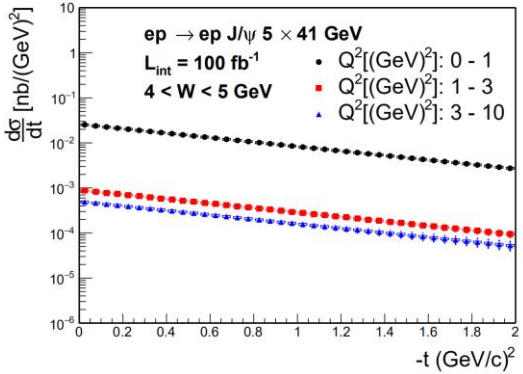
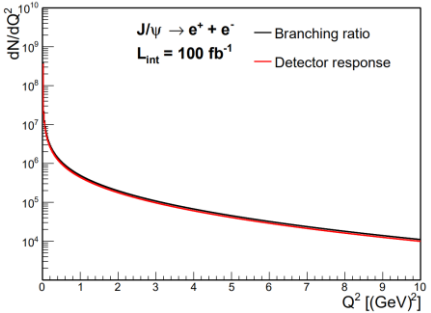
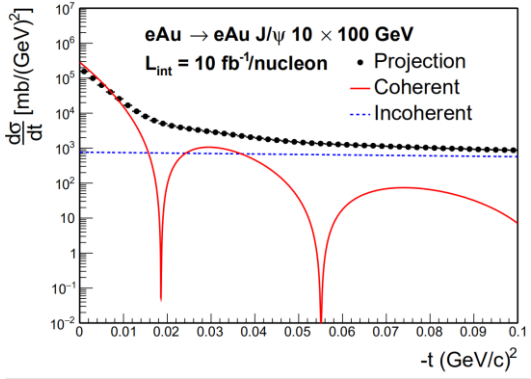






ep5x41

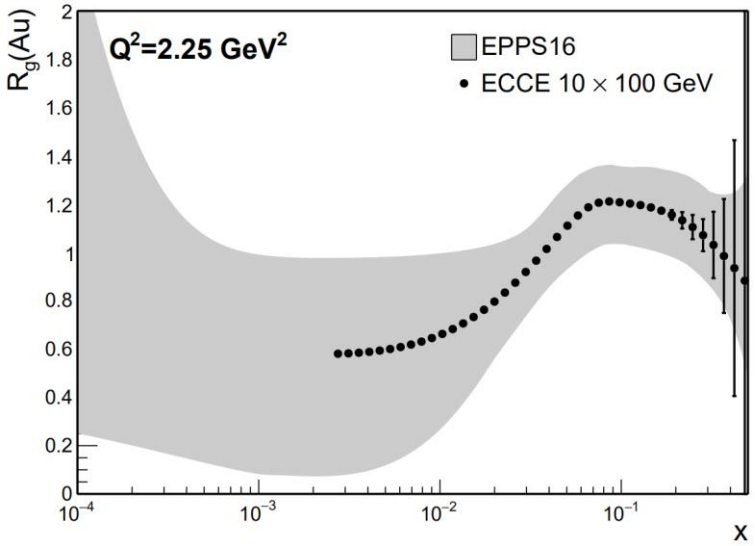


Gluon Shadowing

- Gluon nuclear shadowing effect.

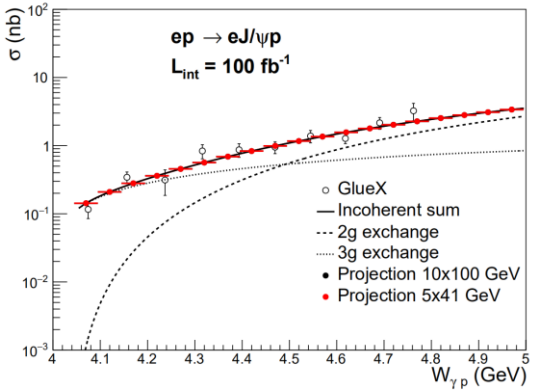
$$\left.\frac{d\sigma(\gamma A \to VA)}{dt}\right|_{t=0} = \frac{\alpha_s^2 \Gamma_{ee}}{3\alpha M_V^6} 16\pi^3 \left[x g_A(x, Q^2)\right]^2 \qquad (5)$$

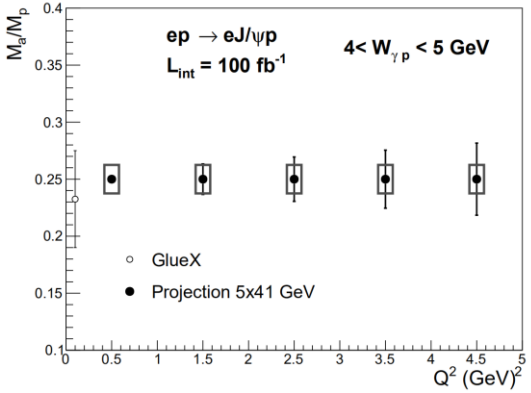
$$x = \frac{M_V e^{\pm y}}{\sqrt{s}} \qquad Q^2 = M_V^2/4 \qquad R_g = \sqrt{\frac{\left.\frac{d\sigma(\gamma A \to VA)}{dt}\right|_{t=0}}{\left.\frac{d\sigma(\gamma p \to Vp)}{dt}\right|_{t=0}}} \qquad (6)$$

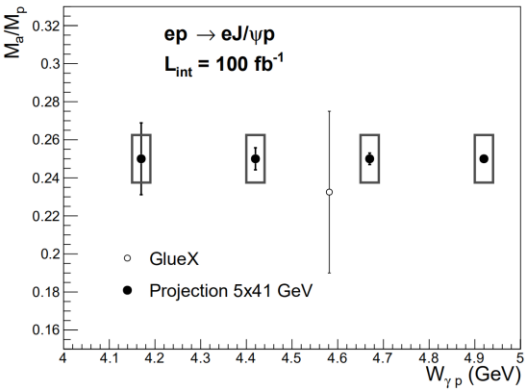


Near Threshold

- 2g and 3g production mechanism (capability)
- Hadron mass decomposition (from above 20 years ago Ji's decomposition.)







updated

Summary and Plan

- This J/Psi photoproduction and physics paper makes a projection of the cross section and statistic based on eSTARLight (with ECCE Tracking performance) and provides an primary view of the capability of several related physics opportunities study.
- Whole system simulation and background study will be expected in further study. (with Bill's great help.) also thanks for Rosi's reminder.

Thanks for listening.

Backup