

DIS2023: XXX International Workshop on Deep-Inelastic Scattering and Related Subjects



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Exclusive threshold J/ψ photoproduction with GlueX

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Exclusive charmonium photoproduction near threshold opens the door for studying the gluonic properties of the proton: gluonic GPDs, anomalous contribution to the mass of the proton, gravitational form factors, the mass radius of the proton. However, such an ambitious program requires precise measurements to validate the theoretical assumptions that relate the experimental results to the above quantities. The first total cross-section measurements of near-threshold exclusive J/ψ photoproduction ($\gamma p \rightarrow J/\psi p$) by the GlueX collaboration sparked remarkable theoretical interest, however had limited statistics. We will report new total cross-section results based on more than a four-fold increase in statistics. Even more, due to the full acceptance of the GlueX experiment for this reaction, we will present first measurements of the differential cross-sections over the whole near-threshold kinematic region. Such measurements enable more general conclusions about the reaction mechanism when compared to a wide range of theoretical predictions including GPD calculations and models with open-charm intermediate states.

Submitted on behalf of a Collaboration?

Yes

Participate in poster competition?

No

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