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J/psi photoproduction close to threshold at GlueX

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Close-to-threshold photoproduction $\gamma p \to J/\psi p$ probes small-size gluon configurations in the proton. Under certain assumptions it allows us to study the proton properties, as gluonic GPDs, anomalous contribution to the mass of the proton, gravitational form factors, and the mass radius of the proton. A careful comparison of the experimental data with the theoretical predictions would help us to verify the validity of those assumptions. The first cross-section measurements of near-threshold reaction $\gamma p \to J/\psi p$ by the GlueX Collaboration (*Phys. Rev. Lett. 123, 072001 (2019)*) has attracted a considerable theoretical interest. Along with the relation to the gluonic properties of the proton, the measurement exploited a possibility of the LHCb Pentaquark production in the s-channel of the observed reaction, placing a limit of the decay probability $P \to J/\psi p$. Here we present new GlueX results based on a four-times larger data set. The higher statistics along with the full acceptance of the GlueX spectrometer allow us to measure the differential cross section in several energy ranges and compare the results with several theoretical calculations.

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