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Vector meson-proton scattering lengths from omega to upsilon

High-accuracy upsilon photoproduction data from EIC and EicC experiments will allow the measurement of the near-threshold total cross section of the reaction gamma + p –> upsilon + p, from which the absolute value of the upsilon-p-scattering length can be extracted using a vector-meson dominance model. For this evaluation, we used upsilon-meson photoproduction quasidata from the QCD approach (the production amplitude can be factorized in terms of gluonic generalized parton distributions and the quarkonium distribution amplitude). A comparative analysis of vector meson-proton with the recently determined scattering lengths for omega-p, phi-p, and J/psi-p using the A2, CLAS, and GlueX experimental data are performed. The role of the "young"vector meson effect is evaluated.

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