

The near threshold photo or electroproduction of heavy vector quarkonium off the proton is studied in quantum chromodynamics. Similar to the high-energy limit, the production amplitude can be factorized in terms of gluonic Generalized Parton Distributions and the quarkonium distribution amplitude. At the threshold, the threshold kinematics has a large skewness parameter  $\xi$ , leading to the dominance of the spin-2 contribution over higher-spin twist-2 operators. Thus threshold production data are useful to extract the gluonic gravitational form factors, allowing studying the gluonic contributions to the quantum anomalous energy, mass radius, spin and mechanical pressure in the proton. We use the recent GlueX data on the  $J/\psi$  photoproduction to illustrate the potential physics impact from the high-precision data from future JLab 12 GeV and EIC physics program.