Exclusive photoproduction of heavy vector mesons

Saturday, 27 April 2024 15:00 (20)

Exclusive photoproduction of heavy vector mesons from the proton is widely assumed to proceed via mechanisms that are sensitive to glue physics in the target proton. It was once thought that vector meson dominance could be used to relate this photoproduction process to the in-proton expectation value of the trace anomaly in quantum chromodynamics (QCD); hence, to deliver insights into the character of emergent hadron mass. That is now known to be false. Nevertheless, some consider that it may still be possible to interpret nearthreshold heavy meson production using generalised parton distributions (GPDs) and therewith gain access to in-proton gluon gravitational form factors. There are arguments to the contrary, however. Using continuum Schwinger function methods, we show that it is possible to unify all J/psi photoproduction data, from threshold to very high energy, using a fully-dressed photon-to-quark+quark-to-J/psi transition amplitude, in which the dressed quarks communicate with their proton counterparts via Pomeron exchange. This being the case, then any interpretation of threshold J/psi production in terms of a proton mass radius is tenuous.

Primary author(s): Mr TANG, Lin (Nanjing University)
Presenter(s): Mr TANG, Lin (Nanjing University)
Session Classification: XXX 1