

Shedding light on shadow generalized parton distributions

The feasibility of extracting generalized parton distributions (GPDs) from deeply-virtual Compton scattering (DVCS) data has recently been questioned because of the existence of an infinite set of so-called “shadow GPDs” (SGPDs). These SGPDs are process-dependent and manifest as multiple solutions (at a fixed Q^2) to the inverse problem that needs to be solved to infer GPDs from DVCS data. SGPDs therefore pose a significant challenge for extracting GPDs from DVCS data. With this motivation we study the extent to which scale evolution can provide constraints on SGPDs. Our key finding is that scale evolution, coupled with data over a wide range of ξ and Q^2 , can constrain the known classes of SGPDs and make possible the extraction of GPDs from DVCS data over a limited range in the GPD variables.

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